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CONTENTS

Cholesterol of the Blood of Diabetic Children. *Priscilla White* and *Hazel Hunt* 607
A Rectal Temperature Recording Apparatus. *William B. Breed* 616
The Academic Career in Surgery. *Elliott C. Cutler* 620
The Husbandry of the Hospital. *M. F. Fallon* 626
Fractures of the Astragalus. *Edward J. Sawyer.* 629
A Suggestion for the Control of Puerperal Sepsis. *H. A. Chase* 630
Amputation (Lower Leg) Subsequent to Infantile Paralysis. *Charles F. Painter* 631

VERMONT STATE MEDICAL SOCIETY

The Common Cold. *Frederick N. Sperry* 632
Miscellany 636

CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

Case 16131—Abdominal Pain, Jaundice and Ascites. *A. V. Bock, George W. Holmes* and *Tracy B. Mallory.* Case 16132—Signs of Acute Infection Associated with Rigidity of the Neck in a Schoolgirl of Fifteen. *William D. Smith* and *Tracy B. Mallory* 638

EDITORIALS

Blood Cholesterol of Diabetic Children 645
Overzealous Oöphorectomy 645
This Week's Issue 646

(*Contents continued on next page*)

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CONTENTS

(Continued)

THE MASSACHUSETTS MEDICAL SOCIETY

Section of Obstetrics and Gynecology 646
Are Your Annual Dues for 1930 Paid? 647
The Report of the Delegates to the Recent Meetings in Chicago 648
The Medical Library and Massachusetts Medical Society Fund 650

BOOK REVIEWS

Incompatibility in Prescriptions and How to Avoid It. Thomas Stephenson 656
Insomnia: How to Combat It. Joseph Collins. 656
The Volume of the Blood and Plasma in Health and Disease. Leonard G. Rowntree and George E. Brown 656

CORRESPONDENCE

An Appreciation of the Children's Hospital with Suggestions to Other Institutions. William Frankman 653
A Reference to Alcoholic Beverages and Anaesthesia. Charles Hooper 653

MISCELLANY

Comparison of Disease Incidence in Connecticut with 1928 and Seven Year Average Month Ending March 8, 1930 651
Cost of Membership in a State Medical Society. 652
Delta Omega 650
Excerpts from the Bulletin of the Children's Bureau 650
The Household Nursing Association 650
A Memorial Tribute to Dr. W. L. McClure 650
Résumé of Communicable Diseases in Massachusetts, January, 1930 651
The Washingtonian Home Needs Funds 650
Weekly Health Index 650

NEWS ITEMS 654

RECENT DEATH 653

REPORTS AND NOTICES OF MEETINGS 654

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES 656

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The next Annual Meeting of the Massachusetts Medical Society will be held at Plymouth, June 17 and 18, 1930.

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The 139th Annual Meeting will be held Tuesday and Wednesday, May 13-14, 1930, at Concord.
The House of Delegates will hold its first meeting Monday evening, May 12.

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VOLUME 202 MARCH 27, 1930 NUMBER 13

CHOLESTEROL OF THE BLOOD OF DIABETIC CHILDREN*

BY PRISCILLA WHITE, M.D., † AND HAZEL HUNT, A.B.†

EXCESS of cholesterol in the blood is today an exceptional finding in diabetic children in whom the disease is uncomplicated. In eighty per cent. of one hundred such children treated between the years 1926 and 1929, the most recent cholesterol of the blood was below 230 milligrams.

Despite this infrequent occurrence, the investigation of fat metabolism and the effects of faulty fat metabolism upon the young organism are of great importance: first, acute fat imbalance occurs more frequently in the child due to his greater susceptibility to coma; second, even among children clinical manifestations of abnormal fat metamorphosis, such as xanthoma diabeticorum, occur; third, in the untreated and pre-insulin treated diabetic child disturbance of lipoid metabolism, manifested by atheromatous degeneration of the vessel walls and lipoid deposition in the reticuloendothelial system, has been the outstanding pathological change found at autopsy[1]; fourth, the child provides the most conclusive material, because of the absence of age factors, for the solution of the etiological significance of faulty fat metabolism as a precursor of arteriosclerosis.

Our study of the metabolism of fat in diabetes covers four years and includes one hundred and ten children. Undoubtedly a decade or more of time would be preferable to four years, but this interval represents a considerable advance over that of previous series and furnishes what we regard as new links in a chain of evidence rather than ultimate conclusions. The series may be divided into three groups. In the first group are one hundred patients who at the time of observation had no obvious disturbance of fat metabolism; in the second group are ten patients in whom the analyses were made during coma or severe acidosis; in the third group are two patients who were studied because of the appearance of xanthoma diabeticorum.

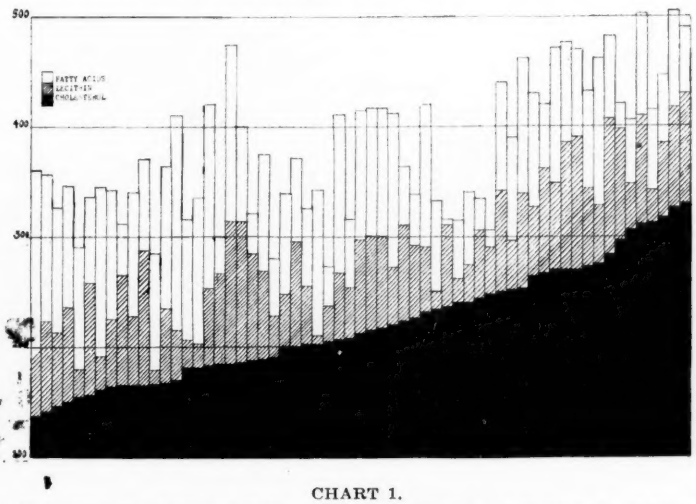

CHART 1.
Cholesterol, Lecithin and Fatty Acids in the Plasma of 61 Diabetic Children (in mgs. per 100 c.c. blood).

Cholesterol, in this work, has been taken as the index of total lipid. In a recent article published by one of us,[2] cholesterol has been shown to be the true index of fat metabolism in insulin-treated diabetics. This is even more strikingly illustrated in the child than in the adult, as shown in Chart I. Complete fat partitions including cholesterol, lecithin and fatty acids were done on sixty-one children.

As the cholesterol increases there is a strikingly parallel increase in the amount of lecithin and fatty acids. It will be noted that the fatty acid is never below 200 mgs. per cent. when the cholesterol is below 200 and in 94 per cent. of the cases in which the cholesterol is at this level the fatty acid is above 300 mgs. per cent. A

*From the Clinic of Dr. Elliott P. Joslin and the Laboratory of the New England Deaconess Hospital.

†White—Associate Staff, New England Deaconess Hospital. Hunt—Director of the Chemical Laboratory at the New England Deaconess Hospital. For records and addresses of authors see "This Week's Issue," page 646.

somewhat similar relation is found to exist between the lecithin and the cholesterol.

The upper limit of normal cholesterol, even in children, has been placed at 230 mgs. per cent. in this group. Bloor's[3] method for cholesterol was used in all these determinations, and all analyses were checked within 5 per cent. The level of cholesterol in normal individuals, determined by this method, has been observed to be of such a wide range, that we have been unwilling to consider diabetic values abnormally high unless they exceed 230 mgs. per cent. Should we apply a more severe test and lower the standard for our first group of one hundred children, as the work of Rabinowitch[4] and others would indicate, seventeen others would have values which might thus be considered abnormal, i.e., from 200 mgs. to 230 mgs. Therefore, in a total of 37 per cent. of the children the cholesterol was above 200 mgs. In 22 per cent. the cholesterol varied in amounts from 175 to 200 mgs. and in 41 per cent. indisputably normal values below 175 mgs. occurred. In one patient only did we find an extremely low plasma cholesterol, 95 mgs. per 100 c.m., Case No. 5455, a girl of 18.6 years of age in whom the onset of diabetes was at 12.3 years. At the time the analysis was made she had no clinical signs of hyperthyroidism or advanced tuberculosis, conditions commonly associated with hypocholesterolaemia.

TABLE 1

FASTING BLOOD SUGAR AND CHOLESTEROL

	Blood Sugar		Cholesterol		Anal. No.	Cases No.
	Av. %	Range %	Av. mg. 100 c.c.	Range mg. 100 c.c.		
Blood sugar below 0.14	0.09	0.03 - 0.14	204	109 - 347	24	22
Blood sugar 0.15 to 0.20	0.19	0.16 - 0.20	181	109 - 246	14	13
Blood Sugar 0.20 to 0.30	0.26	0.21 - 0.30	209	101 - 410	41	36
Blood sugar 0.31 to 0.40	0.34	0.31 - 0.40	223	138 - 314	28	24
Blood sugar 0.41 to 0.55	0.48	0.41 - 0.53	211	165 - 316	7	7

Six analyses are not included because no blood sugars were done.

DIABETIC DECOMPENSATION AND CHOLESTEROL

Control of diabetes in our children, as measured by hyperglycaemia and glycosuria on the day of analysis, did not affect the cholesterol of the blood. Blood sugar and cholesterol curves not only oppose one another, but also a high percentage of one does not presuppose a high percentage of the other. Thus 30 per cent. of the total cholesterol analyses were over 230 mgs. whereas 63 per cent. of the blood sugars were more than 0.16 per cent. In Table I, in which blood sugars are placed in five ascending groups, it is found that when the average blood sugar was 0.48 per cent., the average cholesterol was 211 mgs., or but three per cent. higher than the group in which the average blood sugar was 0.09 per cent.

Fasting hyperglycaemia occurs more frequently and to a greater degree in the child than in the adult and it is again for this reason that it is the child whom we can expect in the future to give us the solution of the problem as to whether hyperglycaemia or hypercholesterolaemia, or the combination of the two, may be the precursors of atheromatous degeneration of the vessels of diabetics.

TABLE II

POSTPRANDIAL BLOOD SUGAR AND CHOLESTEROL

	Blood Sugar		Cholesterol			
	Average %	Range %	Average mg. 100 c.c.	Range mg. 100 c.c.	Anal. No.	Cases No.
Blood sugar one hour p.c.	0.19	0.10 - 0.36	226	174 - 306	6	6
Blood sugar two hours p.c.	0.26	0.12 - 0.47	185	126 - 233	9	9
Blood sugar three hours p.c.	0.16	0.05 - 0.43	229	123 - 500	15	13
Blood sugar four hours p.c.	0.11	0.04 - 0.23	237	117 - 390	6	6
Blood sugar five hours p.c.	0.05	0.03 - 0.07	157	125 - 189	2	2

Sixteen analyses are not included because of absence of known time relation of blood sugar to meal.

The peak of the cholesterol curve (Table II) of the post-prandial bloods occurred in these diabetic children in the fourth hour, and the average at this time was 237 mgs. In the fifth hour the cholesterol and the blood sugar both dropped. But just as hypercholesterolaemia and hyperglycaemia do not go hand in hand, hypoglycaemia does not presuppose hypocholesterolaemia. In nine patients in whom the blood sugar was 0.06 per cent., or below, the average cholesterol was 243 mgs.

The presence of glycosuria did not influence blood cholesterol any more than did hyperglycaemia. The diabetes was compensated during 23 analyses, as indicated by the absence of glycosuria on the day of the analysis. In this group the average cholesterol was 211 mgs., which was exactly the same value as the average cholesterol of the group in which decompensation varied from an excretion of 0.1 to 8.0 per cent. sugar on the day of the analysis.

TABLE III

DURATION OF DIABETES AND CHOLESTEROL OF THE BLOOD

Duration in years	Cholesterol mgs. per 100c.c.		Age in years		Anal. No.	Cases No.
	Av.	Range	Av.	Range		
0 - 1	175	102 - 234	10.6	3.8-15.0	15	13
1 - 2	204	109 - 310	12.2	5.2-16.3	17	15
2 - 3	199	123 - 272	12.0	4.6-16.7	23	20
3 - 4	176	103 - 500	13.4	5.5-18.5	18	16
4 - 5	217	102 - 431	15.4	8.0-19.2	18	14
5 - 6	254	141 - 490	15.5	9.1-19.9	21	17
6 - 7	210	95 - 345	15.0	9.2-21.0	23	18
7 - 8	216	147 - 312	16.0	12.5-18.6	14	12
8 - 9	210	150 - 347	16.3	11.0-19.1	14	11
9 -10	173	148 - 192	14.5	12.0-15.9	4	4
10-11	253	220 - 306	18.1	15.2-22.2	3	3
11-12	175	135 - 215	17.9	16.0-19.8	2	2

DURATION OF DISEASE AND CHOLESTEROL

The duration of the diabetes in the child, as in the adult, appeared to have no bearing upon a change in the value of the cholesterol. This is significant because the child is a better thermometer of changes associated with duration than the adult. When he has had the disease five years, he may have had it fifty or even ninety per cent. of his total life, whereas five years for the adult would be hardly more than ten per cent. of life at most.

Unlike increasing duration is the effect of increasing age. When age and duration are compared together, as in Table IV, the peak occurs during the seventh year of the disease when the average age is 15.0 years, and again during the eleventh year when the average age is 19.1 years. When age is considered apart from duration, the only age group in which hypercholesterolaemia occurs is from 16 to 20 years. General body metabolism of the diabetic seems to be thrown out of balance at this period. The only group of our children with an abnormally high heat production occurred at this same age[5]. Lesné[6] and his co-workers have observed a physiological rise of blood cholesterol in normal adolescent children.

TABLE IV

INFLUENCE OF AGE UPON BLOOD CHOLESTEROL

	Cholesterol Mgs. per 100c.c.		Analyses No.	Cases No.
	Average	Range		
Under 5 years of age	217	157-278	4	4
6 to 10 years of age	192	123-277	27	20
11 to 15 years of age	193	102-338	76	45
16 to 20 years of age	238	95-500	59	37
Over 20 years of age	197	164-232	6	5

When hypercholesterolaemia occurs with the increasing age and duration of the disease, it tends later to approach normal levels. In forty-two patients in this entire series subsequent analyses have been made. Twenty of the group have had cholesterol values of the blood well above 230 mgs. per cent.; whereas twenty-two have cholesterol values well below this level. In seven of the group with hypercholesterolaemia in the latest analysis the values are below 230 mgs. In four the values are approaching normal, and in nine the cholesterol remains consistently high.

Clinical analyses of these two groups show that the complications of diabetes have occurred in both. Arteriosclerosis occurred in five patients with normal cholesterol of the blood. The cholesterol was known to have been below 230 mgs. per cent. in three cases: Case No. 1616, Case No. 2007, and Case No. 2870 prior to the appearance of calcification of the vessels of the legs. In the remaining two patients, Case No. 3620 and Case No. 2353, the cholesterol values of the blood prior to the appearance of sclerosis were not determined. Four of the patients with elevated cholesterol values of the blood had x-ray evidence of calcification of the vessels of the legs. In two of these, Case No. 2717 and Case No. 4232, the calcification developed during the period when the cholesterol was elevated as shown by previous negative roentgen-ray findings. In the remaining two patients the first cholesterol determinations were coincident with the first x-rays taken, in which calcification was already demonstrable.

Coma in the past history of the group with hypercholesterolaemia was more frequent than in the group with normal values. It was known to have occurred seven times in the former group and but four times in the latter. In both groups it has occurred twice since the first analyses were made.

Tuberculosis developed after the first cholesterol analysis in one patient only in this group of forty-two and this was Case No. 4232, who had persistently elevated cholesterol values; she also has arteriosclerosis and is the only patient in the entire group to have developed cataracts.

DIETARY TREATMENT AND CHOLESTEROL

Correlations of diet and cholesterol are difficult and one cannot be too cautious about drawing conclusions, for diabetic children are often unreliable. The type of diet we have employed, in which the carbohydrate ranges from 10 to 40 per cent. of total calories, the protein from 10 to 20 per cent., and the fat from 40 to 70 per cent., makes this problem all the more difficult for us. Bloor[8] has found that a diet high in fat does not influence the fat in the blood unless over 80 per cent. of the total calories are taken in this form. The child who receives this amount, at least by prescription, in our clinic is exceptional. Diets in which the range of fat is from 40 to 70 per cent. of the total diet had no effect upon blood cholesterol in our children. However, Case No. 4568 with xanthoma diabeticorum and Case No. 6767 with the same complication showed a steady drop in cholesterol when the fat in the diet was reduced in the former from 63 per cent. to 40 per cent. and in the latter from 75 per cent. to 50 per cent. It is proper to record that coincidentally the total calories were reduced from 31 per kilogram to 23 per kilogram, and from 36 per kilogram to 29 per kilogram respectively. In the controlled hospitalization of the former the cholesterol dropped 53 per cent. from 518 to 242 mgs. per 100 c.c. in 19 days. The second patient was not hospitalized. Her xanthomatous lesions disappeared in three weeks when the fat in the diet was reduced and it was noted that the cholesterol fell 24 per cent., namely from 590 to 446 mgs.

The average cholesterol of our group is 211

TABLE V-1

ANALYSIS OF 22 PATIENTS WITH SUBSEQUENT DATA IN WHICH THE CHOLESTEROL VALUES OF THE BLOOD HAVE BEEN PERSISTENTLY LOW

Case No.	Age in years	Dur. of Disease in years	Date of Cholesterol	Cholesterol mgs. per cent.	Arteriosclerosis		Coma		Tuberculosis	
					Prior to test	Since test	Prior to test	Since test	Prior to test	Since test
1616	13.2	8.3	27-4	222						
	15.2	10.3	28-12	306p.c.						
	16.0	11.1	29-9	215	0	tr	+	0	+	-
1949	14.5	7.6	28-1	183						
	15.5	8.6	28-12	231	0	0	0	0	0	0
1997	18.6	7.8	27-6	158						
	19.1	8.3	28-1	175	0	0	0	0	0	0
2007	11.9	6.3	27-3	200						
	12.7	7.1	28-1	165	0	tr	0	0	+	-
2084	11.0	6.0	27-6	221						
	12.1	9.1	28-7	166	0	0	0	0	0	0
2353	15.2	6.5	28-1	207						
	16.3	7.6	29-2	172	+	-	0	0	0	0
2419	23.0	8.4	28-0	171						
	23.5	8.9	28-3	164	0	0	0	0	0	0
2680	12.0	5.4	26-3	221						
	13.1	6.5	27-5	109						
	13.2	6.6	27-6	169						
	13.8	7.2	28-1	147						
	14.4	7.8	28-8	202						
	14.9	8.3	29-2	181						
	15.2	8.6	29-5	127						
	15.4	8.8	29-7	126						
	15.7	9.1	29-11	192	0	0	0	0	0	0
2847	16.7	7.6	27-4	156						
	17.6	8.5	28-2	150	0	0	0	0	0	0
2870	18.6	4.5	27-6	162						
	19.5	5.4	28-5	172	0	tr	0	0	0	0
3620	15.4	5.3	27-11	185						
	16.8	6.7	29-4	125	+	-	+	0	0	0
3967	14.9	3.4	27-7	165						
	16.0	4.5	28-0	181	no x-ray		0	0	0	0
4178	14.7	3.6	27-4	189						
	15.6	4.5	28-6	146	0	0	+	0	0	0
5140	11.5	2.8	28-12	198						
	12.3	3.6	29-10	113	no x-ray		0	0	0	0
5247	13.2	2.9	29-1	185						
	13.7	3.4	29-7	175	no x-ray		0	0	0	0
5330	10.2	1.0	27-7	185						
	11.7	2.5	29-3	175	no x-ray		precoma	0	0	0
5636	14.8	2.0	28-2	168						
	15.9	3.8	28-6	179	no x-ray		0	+	0	0
5760	17.8	3.0	27-1	189						
	15.9	3.8	28-1	236p.c.	no x-ray		0	0	0	0
5778	14.1	0.9	27-12	181						
	16.3	2.0	29-2	163	no x-ray		0	0	0	0
6154	15.9	5.4	27-7	190						
	17.6	7.1	29-3	174	no x-ray		0	0	0	0
6287	12.3	5.6	27-12	165						
	13.6	6.9	29-3	154	0	0	+	+	0	0
6509	10.0	0.3	27-12	234						
	10.0	0.3	27-12	200						
	11.0	1.3	29-1	220	no x-ray		0	0	0	0
Average	14.9	5.7		179	2	3	4	2	2	0

mgs. per 100 c.c. of blood. In those clinics where higher fat diets are employed, such as Rabinowitch's, the average cholesterol is 243 mgs. per 100 c.c. and in the group of 38 which Boyd[9] published in a study of about ninety children the average cholesterol is 194 mgs. per 1000 c.c.† blood cholesterol are not alarming, the average of this group being but 236 mgs. per 100 c.c. of blood.

Over-nutrition, however, is followed by increase of blood cholesterol, as shown by two factors. When the diet was more than 50 per cent.

TABLE V-2

ANALYSIS OF 20 PATIENTS WITH SUBSEQUENT DATA IN WHICH CHOLESTEROL VALUES OF THE BLOOD HAVE BEEN ABOVE NORMAL

Case No.	Age in years	Dur. of Disease in years	Date of Cholesterol	Cholesterol mgs. per cent	Arteriosclerosis		Coma		Tuberculosis	
					Prior to test	Since test	Prior to test	Since test	Prior to test	Since test
2024	18.1	7.2	28-1	270	0	0				
	18.6	7.6	28-6	311pc	0	0	+	0	0	0
2528	16.9	6.3	27-4	316						
	17.2	6.6	27-8	248						
	17.7	7.1	28-2	312						
	18.9	8.3	29-4	355	0	0	0	0	0	0
2617	19.1	5.0	27-3	390						
	19.2	5.7	27-5	490						
	19.3	5.2	27-6	307						
	19.9	5.8	28-1	298	0	tr	0	0	0	0
2661	11.0	5.8	27-5	194						
	11.5	6.3	27-12	240						
	12.5	7.3	28-12	294						
	13.4	8.2	29-4	207	0	0	0	0	0	0
2757	16.1	5.5	28-1	327						
	17.0	6.4	28-12	205	tr		0	0	0	0
2560	12.4	6.5	27-12	308						
	12.4	6.5	27-12	267						
	14.2	8.3	29-8	309	no x-ray	no x-ray	0	0	0	0
2962	16.3	3.9	26-11	500						
	16.6	4.3	27-3	312						
	16.8	4.5	27-6	431						
	17.4	5.0	27-12	330						
	18.0	5.6	28-7	340						
	18.6	6.3	29-3	345	0	0	0	0	0	0
3040	15.4	5.1	28-1	270						
	16.4	6.1	29-1	169	0	0	+	0	0	0
3262	12.4	5.3	28-1	283						
	13.6	6.1	29-3	233	0	no x-ray	0	0	0	0
3778	12.7	7.3	27-6	258						
	13.3	8.0	28-2	347	0	0	+	0	0	0
3078	17.4	4.3	26-4	392						
	18.0	4.9	28-12	216						
	18.0	4.9	28-12	164	0	0	0	+	0	0
4232	19.1	5.6	26-10	395						
•	20.4	6.4	28-2	275						
	21.2	7.2	28-11	246	0	tr	+	+		+
4568	20.9	7.4	29-6	518						
	"	"	"	344						
	"	"	"	338						
	"	"	"	242						
	"	"	"	298	0	no x-ray	+	0	0	0
4743	19.2	4.5	27-10	266						
	21.0	6.3	29-7	153	0	no x-ray	+	0	0	0
4768	13.7	3.7	27-7	265						
	14.3	4.3	28-2	212						
	14.7	4.7	28-7	246						
	15.8	5.8	29-2	189	0	0	0	0	0	0
5560	16.7	2.9	27-11	251						
	16.7	2.9	27-11	226						
	18.6	4.8	29-10	196	no x-ray	no x-ray	0	0	0	0
6065	8.0	0.1	27-6	120						
	9.5	1.6	28-12	276						
	10.1	2.1	29-6	173						
	10.4	2.4	29-10	277	0	no x-ray	0	0	0	0
6203	13.7	0.9	27-7	185						
	14.3	1.5	28-2	240						
	14.7	1.9	28-7	208						
	15.8	3.0	29-8	256	0	0	0	0	0	0
6767	10.9	4.0	29-10	590						
	11.0	4.1	29-12	446	0	0	+	0	0	0
6416	14.5	6.1	28-6	361						
	14.8	6.4	28-10	254	+	no x-ray	0	0	0	0
Average	16.1	5.5		293	2	2	7	2	0	1

• Diagnosis of cataracts since first analysis.

Geyelin, in a personal communication, stated that he has never seen a blood cholesterol above 230 mgs. in a diabetic child treated with 200 grams of carbohydrate, but even among our children who have taken treatment entirely into their own hands, the effects of this measured by above basal and the weight more than 20 per cent. above the standard for height and age, the blood cholesterol was above 230 mgs.

When the diets prescribed were below the basal metabolic rate, as in the first few days of treatment, the average cholesterol was 193 mgs. per 100 c.c. When the prescribed diets of patients were less than 25 to 50 per cent. above the

†This value is the average value found in Table I of Boyd's article.

basal, the average cholesterol was 228 mgs. Four patients were treated with over-nutrition of more than 50 per cent. above basal requirement and the average cholesterol was 292 and the minimum 276 mgs. per 100 c.c. of blood.

BODY WEIGHT AND CHOLESTEROL

Not only were abnormalities of body weight amounting to over 20 per cent. above weight associated with hypercholesterolaemia, but subnormal weights of 10 per cent. or more were also associated with an increase of blood cholesterol. Thus it appears that any deviation of weight from the normal standard is associated with a change in fat metabolism.

In the five patients who were 20 per cent. or more above weight the average cholesterol was 253 mgs. Three patients who are 30 per cent. above weight have an average cholesterol of 318 mgs. One hundred analyses were made in patients whose weights varied from 10 per cent. below to 10 per cent. above standard, and the average cholesterol was 207 mgs. Thirty-eight analyses were made on patients whose weights are more than 10 per cent. below standard and the average cholesterol is 264 mgs. It would thus appear that the entrance of an excess of fat into the metabolism, whether because of intake of food leading to an increase of weight or from lack of food and a withdrawal of fat from the tissues, led to the same result, namely, an increase in the circulating cholesterol.

TABLE VI

RELATION OF DIET TO BASAL METABOLIC NEEDS.

	Diet Av. % total calories above or below basal metabolism	Cholesterol Mgs. per 100c.c. Average	Range	Anal. No.	Cases No.
Diet 3% to 46% below basal	-20	193	141-270	7	7
Diet 1% to 25% above basal	+14	233	147-392	28	26
Diet 26% to 33% above basal	+29	211	162-270	5	5
Diet 33% to 50% above basal	+43	216	117-312	11	11
Diet more than 50% above basal	+60	292	276-314	4	4

TABLE VII

VARIATIONS OF BODY WEIGHT AND CHOLESTEROL OF THE BLOOD

% above weight for height and age	Cholesterol Av.	Range	Anal. No.	Cases No.
+30	360	183 - 431	6	3
+20 to +30	253	149 - 500	7	5
+10 to +20	191	102 - 306	14	12
+10 to -10	207	95 - 392	97	63
-10 to -20	262	103 - 327	26	20
-20 to -30	264	117 - 490	12	9
-30	102		1	1

STATURE AND CHOLESTEROL

Abnormalities of growth in stature have no relationship to cholesterol. Twelve children in this group are long duration cases and their growth in height has been inadequate. These children have a suggestive pituitary appearance, lanugo hair, fine, delicate skin, and sexual underdevelopment, and the average cholesterol in the group is 204 mgs.

COMPLICATIONS OF DIABETES AND CHOLESTEROL

1. Acidosis.

Acidosis is not necessarily associated with an increase of blood cholesterol. The excess, when present, drops quickly to normal upon the instigation of treatment. Thirty analyses were made when the child had a positive ferric chloride or sodium nitro-prusside reaction but had no clinical signs of acidosis. In but one-third of these was the cholesterol above 230. The highest cholesterol was 392 mgs. and the lowest 109 mgs.

2. Coma.

Diabetic coma was associated with hypercholesterolaemia in every instance. Thirty-five analyses were made on 12 children in whom the carbon dioxide combining power of the blood was 20 volumes per cent. or below, and three analyses were made on three children with the clinical signs of acid poisoning and in whom the carbon dioxide combining power was 25 volumes per cent. The range of cholesterol in the patients in true coma was 258 to 1220 mgs.; of the three patients who were in the near coma one cholesterol was normal, 195 mgs., another just above normal, 240 mgs., and the third definitely increased, 380 mgs. None of the children were unresponsive on admission to the hospital, but the severity of the coma, measured by the height of the blood sugar and depth of acidosis, did not bear any relation to the excess of cholesterol.

The cholesterol values in the four children whose blood sugar was over 0.40 per cent. were respectively 264, 295, 297, and 384 mgs. The average cholesterol of the children in whom the CO_2 was above 10 but below 20 was 436 mgs. More detailed analyses of the blood of children and adult diabetics with acid poisoning will soon

be published in a separate paper. The child with the cholesterol value of 1220 mgs. had symptoms of acidosis for several months before entrance to the hospital. All of these children who had coma recovered in spite of the height of the blood cholesterol and blood sugar and the low value of their CO_2 combining power. Therefore, cholesterol values, as well as other chemical measures, do not give the index of prognosis in diabetic coma. A similar conclusion was reached by Boyd.

TABLE VIII

RELATION OF BLOOD CHOLESTEROL TO ACIDOSIS AND COMA

Case No.	Age in Years	Duration of disease in years	Cholesterol mgs.100c.c.	Fatty Acid mg. 100 c.c.	Blood Sugar %	CO_2 Volumes %	Insulin Units	Diacetic Acid in Urine	Glycosuria %	Depth of Kussmaul Breathing	Mental State
Near Coma											
4635	16.0	1.3	384		0.40	25	40	+++	5.5	++	Drowsy
6434	9.5	1.3	195		0.35	24	30	++++	4.0	+++	Normal
6287	12.2	5.5	240		0.63	21	100	+++	6.0	+++	Drowsy
Deep Coma											
3078	19.5	6.4	298	511	0.26	15	125	++	2.0	++	Drowsy
3682	14.7	6.8	270	770	0.25	9	75	++	4.1	++	Drowsy
3778	12.7	6.4	258	526	0.30	16	69	++	0.5	++	Drowsy
4232	19.1	5.1	395		0.29	17	80	++++	4.2	++	Drowsy
4421	16.0	4.9	297	804	0.28	7	255	+++	4.8	+++	Drowsy
5018	6.8	1.8	1008	2618	0.38	9	160	++++	4.5	++	Drowsy
6356	13.4	1.5	1220	3700	0.35	12	105	+++	4.8	++	Drowsy
6767	13.9	3.0	710	1151	0.37	15	70	+++	6.0	++	Drowsy
7047	12.2	1.3	295	1059	0.05*	11	185	+++	4.9	+++	Drowsy
7891	17.7	3.4	264	570	0.72	4	365	+++	3.6	++	Drowsy
8336	13.3	0.1	297	677	0.49	12	20	--	4.8	++	Drowsy

Only cholesterol values in blood taken on admission to hospital are included in this table.

* Entered hospital 5 hours previous to this test with B.S. 0.54 and CO_2 5 volumes per cent.

3. Xanthoma.

The appearance of xanthoma diabeticorum occurring in two children, both of whom were recent coma offenders, was associated with a decrease of the hypercholesterolaemia and a disappearance of lesions when both the per cent. of fat and the total calories of the diet were reduced. Their cholesterol curves are represented in Table IX.

Other complications associated with diabetes, such as infections, cataracts, tuberculosis, and arteriosclerosis occurred a few times among these patients studied.

4. Infections.

Only one child has had a severe, long-standing infection with high fever, under hospital observation. This infection was an acute mastoiditis, and was associated with a low cholesterol of the blood at the time of fever and acidosis though no clinical signs of coma were present.

TABLE IX

TWO CASES OF XANTHOMA DIABETICORUM

Case No.	Age Yrs.	Duration Yrs.	Date	Cholesterol Mgs. 100c.c.	Fatty Acids mgs. 100c.c.	Insulin Units	% Fat in Diet	Calories
4569	20.9	7.4	6/10	518	1027	50	63	1640
			6/20	344	794	50	42	1183
			6/21	338	822	50	42	1183
			6/29	242	537	50	40	1183
			6/29p.c.	298	615	50	40	1231
6767	10.9	4.0	10/19	590p.c.	3955	30	75	1770
			12/7	446p.c.	1695	30	50	1420

5. Cataracts.

One child, Case No. 4232, has cataracts and tuberculosis and her average cholesterol value

is 265 mgs. per cent. Calcification of the arteries in her legs has also been discovered.

6. Tuberculosis.

In four patients nine analyses were made when the patient had tuberculous lesions. Hypercholesterolaemia occurred in two, the average being 349 mgs. per 100 c.c. of blood. The lesions of these four patients were pulmonary tuberculosis in Case No. 4232, tuberculous glands in Case No. 2007, dactylitis in Case No. 1616 and tuberculides of the skin in Case No. 5661.* The highest value occurred in the patient with tuberculosis of the skin. She is the only fatal case in this group. Three of these children, Case No. 1616, Case No. 2007 and Case No. 4232, also have arteriosclerosis.

TABLE X

CHOLESTEROL OF THE BLOOD PRECEDING THE APPEARANCE OF ARTERIOSCLEROSIS

Case No.	Age in years	Duration in years	Sex	X-ray Date	X-ray Sclerosis	Cholesterol Date	Cholesterol mgs/100c.c.
1616	13.6	8.0	M	1924	0		
						1927-4	222
				1927-6	?		
				1927-8	tr		
						1927-3	200
2007	12.1	7.1	M	1927-6	0		
				1928-1	tr		
2617	20.7	6.7	F	1926-	0		
						1927-3	390
						1927-5	490
						1927-6	307
						1928-1	298
				1928-10	tr		
2870	14.6	5.9	M	1926-4	0		
						1926-10	162
				1927-6	0	1928-5	172
				1928-6	tr		
4232	20.4	5.1	F	1924-	0		
						1926-10	395
				1928-2	tr		

7. Arteriosclerosis.

Arteriosclerosis in the vessels of the legs was discovered by Roentgen ray in nine of the 48 children in this group in whom x-ray examinations have been made. Increase of cholesterol occurred in 46 per cent. of the patients studied. Nine analyses were made on five patients during the time that calcification of the vessels of the legs, which had previously shown no evidence of sclerosis, appeared. Two of these patients, prior to the appearance of calcific deposits, had continuously elevated cholesterols of the blood. The remaining three had values below 230 mgs. The average cholesterol in this group, prior to the appearance of calcification, was 292 mgs. per cent.; in 51 analyses in patients in whom cholesterol of the blood was determined before or coincident with a negative x-ray it was 228 mgs. per cent. It is somewhat difficult to formulate conclusions because this is a small group and it so happens that the patients with higher cholesterol values have had more frequent analyses, thus five determinations were made on the two patients with hypercholesterolaemia and only four on the three patients with normal values prior to the discovery of sclerosis.

The average cholesterol of all analyses preceding, coincident with, and following the discovery of arteriosclerosis in the nine children is 263 mgs. per cent.

Thus of our series of 110 children 13 developed complications associated with diabetes other than coma. In three cases more than one complication occurred.

INFLUENCE OF CHOLESTEROL UPON THE PROGNOSIS OF DIABETES

To establish standards for prognosis of diabetes in childhood is difficult. Except from gross neglect, deaths in a series of diabetic children do not often occur. Thus in the space of 19 months there have been but 10 deaths in our total series of 628 children. Increasing the difficulty of interpretation is the fact that our own type of treatment has changed in this period of four years. Whereas formerly the children were rarely given over 50 grams of carbohydrate, at the present time they are rarely given less than 100 grams. In an attempt to study changes in tolerance we have compared the ratio of utilized carbohydrate in grams to insulin in units, and when the difference of the ratio of carbohydrate to insulin increased more than 0.5, in the individual case, from the first ratio obtained, we have considered that the patient had gained tolerance for carbohydrate and was overcoming his disease. When the ratio of carbohydrate to insulin varied less than 0.5, we inferred that the disease or tolerance was unchanged, but when the ratio of the carbohydrate to insulin decreased more than 0.5, we have concluded that tolerance was lost and the disease becoming worse. For example, if C/1 (carbohydrate : insulin), for a series of years in an individual case was 6.0, 5.6, 5.5, tolerance was considered as lost, whereas a ration change of 4.2 to 4.8 would indicate a tolerance gain.

*The average cholesterol of the ten children in whom a diagnosis of "suspicious chest" had been made by Drs. L. B. Morrison and I. K. Bogan is 215 mgs. The effect of any change in the clinical course of these cases will be correlated with future cholesterol values.

When all analyses are considered, the average cholesterol of the children who have gained tolerance after at least 3 years' duration of the disease is 202 mgs. and the average of those who have failed to gain is 240 mgs. When the latest value in each case is taken (and in nearly every one this is the lowest value), the average cholesterol of the children who have gained tolerance is 184 mgs. and of those who have failed to gain, 213 mgs. Although defining tolerance differently, Boyd and Rabinowitch derive similar conclusions.

SEVERITY OF DISEASE AND CHOLESTEROL

Just as improvement in carbohydrate metabolism is associated with low cholesterol values, so is diabetes of milder degrees associated with lower cholesterol values, yet even in the children who, at the latest analysis, were able to utilize less than 50 grams carbohydrate, the average cholesterol was only 239 mgs. The average for those children in whom the disease was characterized as mild after three years' duration was 216 mgs.

TABLE XI

CHOLESTEROL OF THE BLOOD AND X-RAY FINDINGS OF 9 DIABETIC CHILDREN COINCIDENT WITH AND FOLLOWING THE DISCOVERY OF ARTERIOSCLEROSIS

Case No.	Age when Sclerosis was discovered	Duration D.M. when sclerosis was discovered	Sex	X-ray Date	Sclerosis	Date Cholesterol	Mgs/100 c.c.
1616			M	1924-11	0		
				1927-6	?	1928-12	(306 p.c.)
	13.6	8.0		1927-8	tr	1929-9	215
2007			M	1927-6	0		
	12.9	7.1		1928-1	tr	1928-1	165
2353			F	1926-2	0		
	15.2	6.5		1928-1	tr	1928-1	207
				1929-2	tr	1929-2	112
2617			F	1925-9	0	All analyses prior to	
	20.7	6.7		1928-10	tr	appearance of sclerosis	
2757	16.1	5.5	M	1928-1	tr	1928-1	327
				1929-8	tr	1928-12	205
2870			M	1925-4	0	All analyses prior to	
				1927-6	0	appearance of	
	14.6	5.9		1928-6	tr	sclerosis	
3620	16.3	5.2	M	1927-11	++	1927-11	185
				1929-4	++	1929-4	125
4232			F	1924-11	0		(coma)
	20.4	5.1		1928-2	tr	1928-2	278
						1928-11	246
6416	12.9	6.5	M	1928-11	+	1928-6	361
				1928-6	+	1928-10	354
						Average	242

CONCLUSIONS

1. Excess of cholesterol of the blood is an exception in uncomplicated diabetes in children, as shown by the investigation of a series of 110 diabetic children, notable because of the numbers of cases and the length of observation.

2. Cholesterol is a measure of total lipids in the child, as in the adult.

3. There is no close correspondence between glycosuria and blood sugar, on the one hand, and cholesterol, on the other.

4. The postprandial peak of the percentage of cholesterol is at the fourth hour.

5. The duration of the disease in the child, as in the adult, is without significance as regards the cholesterol, but age is a factor which increases cholesterol if it falls between 15 and 19 years; eventually, even with advancing age and duration, there is a subsequent tendency for the cholesterol to decline in amount.

6. Complications of diabetes, such as arteriosclerosis, coma and tuberculosis, occur both among the children with repeated high and repeated low percentages of cholesterol. In our two cases of xanthoma high cholesterol values were found in one prior to the appearance, and in the other coincident with the appearance, of xanthomatous lesions.

7. The average cholesterol in this series is apparently lower than in those clinics in which more fat is allowed in the diet, but we do not consider the evidence above criticism.

8. Overnutrition is accompanied by an increase of cholesterol in the blood.

9. Extremes in variation above or below the normal body standard in weight are accompanied, as a rule, by excess of cholesterol in the blood, but abnormalities in stature were without influence.

10. Acidosis of slight degree is not regularly accompanied by an increase of cholesterol in the blood, but when acidosis reaches the stage of diabetic coma the increase in cholesterol is universal.

11. In diabetes of decreasing severity the average cholesterol value is 20% lower than in cases of progressive diabetes and in mild diabetes the average cholesterol value is 10% lower than in severe cases. Complications of diabetes occurred 6 times following high, and 5 times following low, levels of cholesterol of the blood. The single fatality which has occurred in this entire series was due to untreated diabetic coma. With this amount of data available on diabetic children, we cannot say whether the prognosis of complications or life depends upon the height of

the cholesterol in the blood. Our data furnishes what we regard as new links in the chain of evidence rather than as ultimate conclusions.

12. In almost every instance the few cholesterol values observed to be high are found on repeated analyses to be approaching normal levels.

We wish to acknowledge the constructive criticism of Dr. Rabinowitch.

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A RECTAL TEMPERATURE RECORDING APPARATUS*

BY WILLIAM B. BREED, M.D.†

SINCE 1921 the Medical Service of the House of the Good Samaritan in Boston has been confronted with a difficult problem in the care of children suffering from rheumatic infection. All these patients have had in the past either acute rheumatic fever or chorea, and the majority of them show signs of rheumatic heart disease. The demonstration of definite organic heart damage is simple in most cases. However, the existence of continued activity of infection is difficult to determine in many of them. Among the various criteria of activity such as fever, leukocytosis, nodules, epistaxis, and so forth, we have considered the persistence of fever the most important. In those patients who show a persistent rectal temperature of 100.5°F. and 101°F. the infection, of course, is considered an active one, and is treated as such. Likewise, those who never produce rectal temperature above 99°F. are, in the absence of other suggestive symptoms and signs, considered to be free from active infection and discharged from the hospital as ambulatory cardiac patients or with a diagnosis of potential heart disease. There has always been a group, however, whose temperature peak has hovered between 99.6° and 100.2° by rectum, and yet who at the same time appeared in all other respects free from active infection. Such children have probably been unwisely handled. Not knowing whether the infectious process is still active, we are unable to carry out proper treatment in individual cases. Many undoubtedly are kept in bed months longer than necessary, while others in the same group have been probably allowed freedom before their infection had actually subsided. Thus we are confronted with the problem of what constitutes a normal rectal temperature curve in children. For many years the staff has set 99.8°F. (rectal) as an arbitrary figure above which any reading was considered as indicating fever. Such an arbitrary level is not a satisfactory one in border-line cases.

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†Breed—Associate Physician, Massachusetts General Hospital. For record and address of author see "This Week's Issue," page 646.

There is surprisingly little existing reliable information with respect to normal rectal temperature levels in children. The only pertinent observations reported are the classic ones of Jundell[1] who in 1904 reported that in a total of 4615 single rectal temperature records in normal children only 28 readings showed figures above 99.6°F. Of these one only was 100.2°F., six were 100°F. and 21 were 99.8°F. These observations were made with mercury bulb thermometers at two hour intervals day and night on children in bed. Although these results would make it appear that the normal body temperature of children rarely rises above 99.6°F. (rectal) it seemed desirable to attempt to confirm these findings, and by some other means than by repeating such a laborious piece of work as that of Jundell. Also, there seemed to be obvious sources of error in his technique, which might be avoided by the use of a constantly recording mechanical device. There was also the hope that by such a method, fluctuations of temperature throughout the day might be shown to be of importance, or that some type of continuous temperature curve might indicate by its *character* the presence or absence of infection.

The solution of the problem seemed to lie in devising a suitable thermometric bulb coupled to one of the usual devices for giving a continuous graphic record. Although entirely satisfactory recording instruments were available, no proper bulb had come to our attention, and so particular care was exercised in designing such an end-piece. It had to be easily inserted, cause no discomfort, necessitate no restriction of activity in bed, and be removable at the end of an observational period with no difficulty and without causing distress. A hard rubber cuff was shaped and placed on the terminal with such conditions in mind—and these conditions have been fulfilled, especially its easy retention by the anal sphincter. The subjects—adult and children—all report that once properly in place it causes no discomfort whatever. (Fig. 1.)

This terminal piece, which contains a thermocouple, is connected by wires to the recording apparatus which, by means of a Wheatstone

bridge, records minute changes in temperature in red ink on a slowly moving paper chart having a range from 90° to 110°F. It is accurate to 0.05°F.

A very satisfactory instrument, manufactured by Leeds and Northrop of Philadelphia, was the one chosen for this work. (Fig. 2.) It is identical with that used by Tyson and Burt[2] in studying axillary temperature curves in premature infants, except for the terminal part designed by the writer for rectal use.

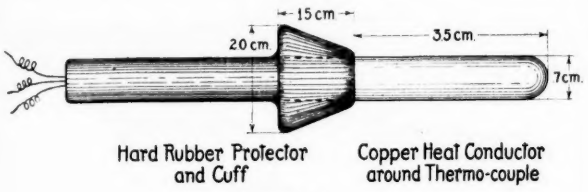

FIGURE 1.

After the apparatus had been assembled and given proper laboratory calibration it was subjected to various preliminary clinical tests which form the basis of the present communication.

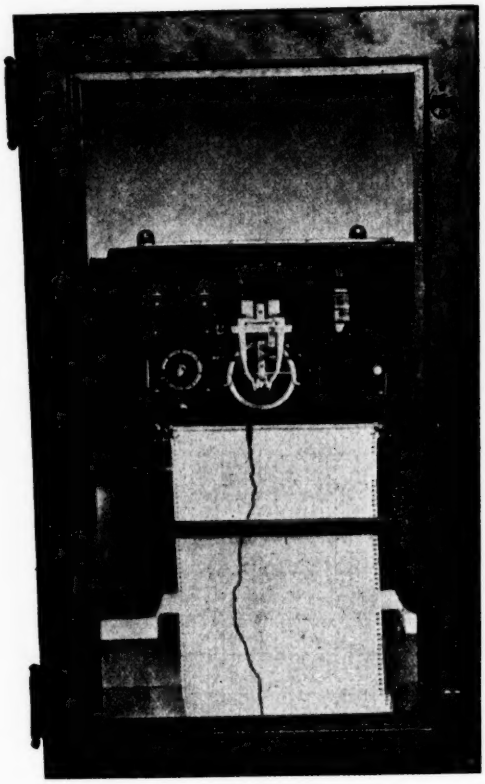

FIGURE 2.

Through the courtesy of the Children's Hospital Orthopedic Service (Boston) we were able to examine a few children 3 weeks after either a manipulation or a clean plastic operation. Also, some adults have been examined at the Massachusetts General Hospital. The instrument is the property of the House of the Good Samaritan.

Figure No. 3 shows an exact reproduction of one twenty-four hour curve. The paper moves out of the machine approximately one inch an hour—so that from 22 to 24 inches of paper are used in 24 hours. The arrow in figure No. 3 indicates immediate response to room temperature on removal of the terminal from the rectum for a few seconds. For the purposes of exposition, because of the length of each daily chart, various curves have been condensed and will be shown somewhat diagrammatically. They read from left to right, while the originals read from right to left.

In Figure No. 4 is shown a composite curve of temperature in a normal child of 9—one, who so far as could be determined was free from infection. The insert represents a week's chart of routine bi-daily rectal readings taken at 7:30 A. M. and at 3:00 P. M. It is apparent at once that the complete curve shows a marked swing that is entirely missed by the ordinary method. Of special interest is the low point reached during the early morning hours, and the fact that the total swing equals 2.5°F., i.e., from 97.3° to 99.8°F. The lowest point recorded in one week on the regular hospital chart is seen to be only 99.°F.

Figure No. 5 shows a curve representing the temperature variation in a child of 8 who presumably has active rheumatic infection. Here the total swing is only 1.8°F., the lowest point being 97.8°. This observation brings up the possibility that infection may be determined on the *lower* side of a temperature curve as well as on the *upper* side. Attention is also called to the small insert on figure No. 5 where during one week by ordinary bi-daily methods (7 A. M. and 3 P. M.) with a mercury bulb thermometer only once did an observation approach the true maximum temperature (100.6°F.), and at no time did the minimum point approach the true minimum by less than 1.8°F.

Figure No. 6 represents temperature curves of three adults with various diagnoses as indicated. Only two points can be spoken of here with any definiteness: (1) all (including the exophthalmic goitre case) reached at one time during the 24 hours a level at or *below* 98.2° and (2) only the goitre case with increased metabolic rate (+ 41%) ever attained a level *above* 99.°F.

COMMENT

Sufficient data have not yet been accumulated to answer the original question that prompted this investigation, which was: Can we by accurate continuous temperature readings determine whether or not a child who has had acute rheumatic fever or chorea is actually free from active infection? Or, reduced to more simple terms, what is a normal body temperature curve in children?

Obviously Jundell's work has neither been

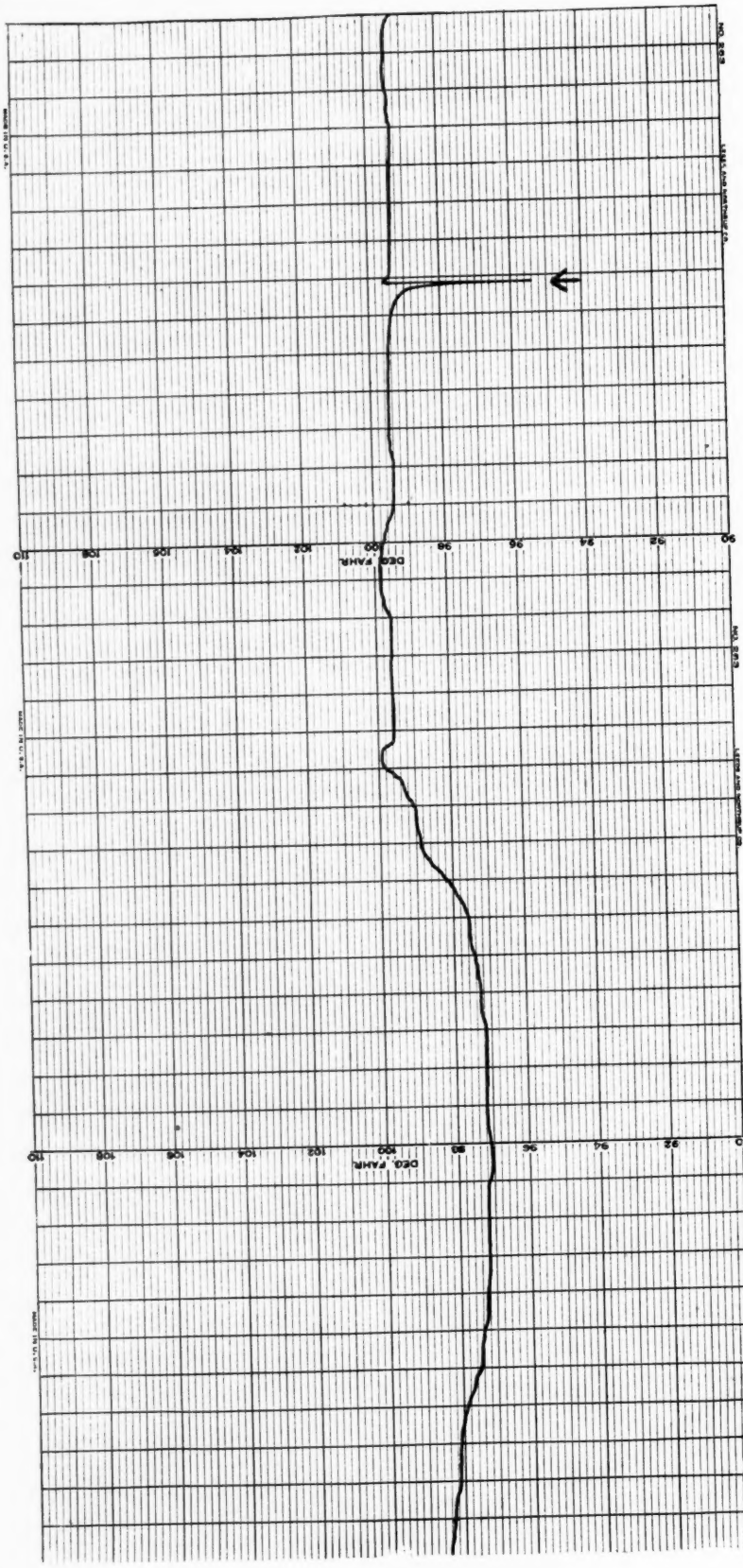
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FIGURE 3

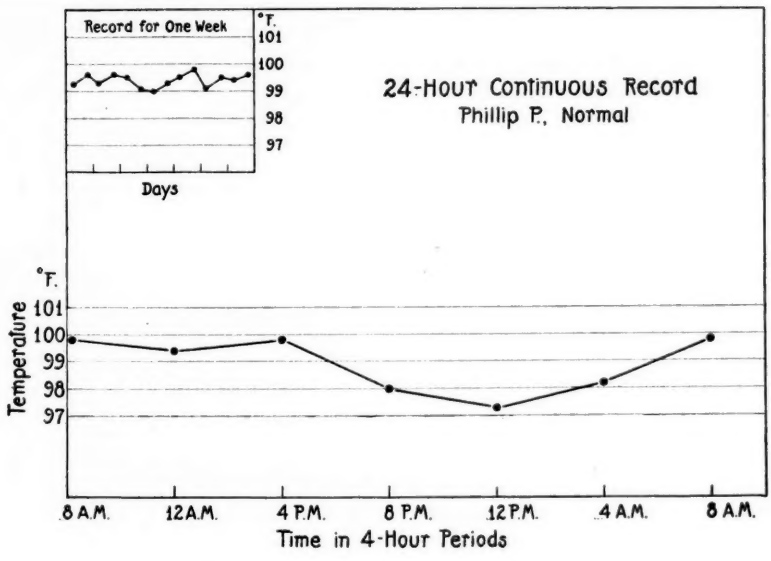

FIGURE 4.

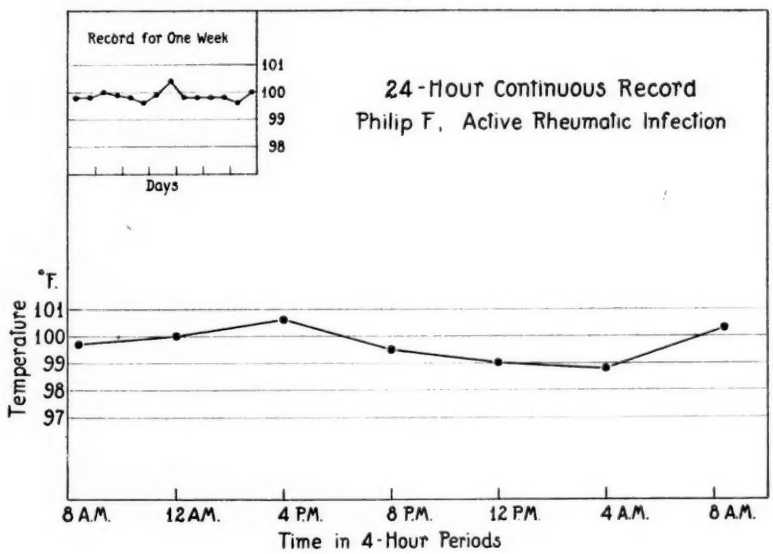

FIGURE 5.

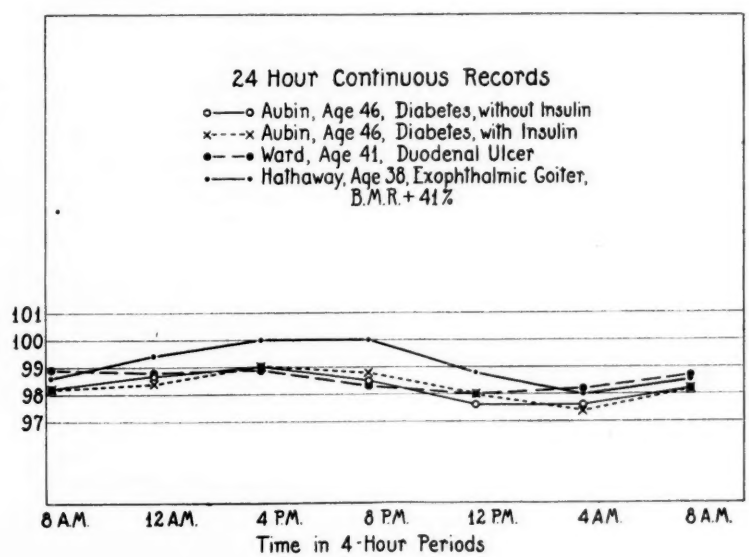

FIGURE 6.

confirmed nor disproved. Many more curves must be made in normal children and in adults, in any satisfactory attempt to ascertain the fever level at different ages.

Naturally the problem stated is only one of many in the solution of which such a recording clinical thermometer might aid. It seems quite probable that with such an apparatus it would be entirely feasible by having a continuous temperature record to discover the significance of temperature changes in such diseases as for example, myxedema, hyperthyroidism, diabetes and pneumonia. Tuberculosis suspects should be critically studied by this method. Furthermore, it would be applicable to the study of shock either following surgical or emotional trauma or that type of shock brought on by the parenteral injection of proteins. It would also give far more detailed information than we now have concerning the action of various drugs, particularly those which affect the heat regulating centers. While the apparatus is designed mainly for human use it could be employed equally well in recording continuous temperatures of animals under various experimental conditions.

This being a preliminary report no conclusions are offered. It is intended merely to call attention to a method of observation which is accurate and practical in clinical use—a method which may become of value as a diagnostic aid in recording characteristic temperature curves in health and disease.

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THE ACADEMIC CAREER IN SURGERY*

BY ELLIOTT C. CUTLER, M.D.†

Gentlemen of Harvard:—

WHEN your representative, Mr. Hume, spoke to me and allowed me to choose as the title for this talk *The Academic Career in Surgery* he did not know that in 1923, when President of the Boylston Medical Society, I had utilized a somewhat similar title in an attempt to point out the various pathways along which medical men might turn their footsteps. In studying this matter again I was pleased to find that, though large changes in my life and work had arisen, the underlying principles of a University Career remained practically unmodified. It seemed that this larger experience might allow me to restate the matter to some advantage.

You have already chosen the Profession of Medicine. Within this profession there is available the widest possible variety of careers. One can accept a purely practical or a purely theoretical life and remain a valuable worker in medicine. One may practice the art upon suffering humanity or prosecute the science, upon which practice rests, in the absolute solitude of a laboratory. One life is filled with multifarious contacts, with the closest association with men; the other may be as isolated as that of religious hermits who live in mountain caves and reckon their devotion according to their isolation. That particular part in this great profession which is to occupy your lifetime may be, to most of you, still unknown. But in the group here today there may be some who are anticipating a career confined to hospitals and universities. It is of such a life that I shall attempt to speak.

Let me at once disabuse you of any thought that I consider this type of work better than other careers in medicine. Much harm has come to the Profession in modern times through the assumption by certain individuals in University posts that they are doing something better than individuals in practice or in other forms of medical work. I can honestly say that a good general practitioner of medicine in the country is, in my mind, accomplishing just as creditable a life's work as a full-time professor of medicine. It is not that one career is better than another, but merely that there are differences. And this is most fortunate. No two individuals are constructed alike. No two react to stimuli the same. It would indeed be a sorry world if all of us had similar desires. Thus I come before you today not to proselyte you towards a University career but merely to point out to you something of what such a life may consist, of the training which it may be wise to acquire if one is to attempt it, and perhaps something of its rewards. Those of you who by nature are headed towards or thinking of such a career may thus be assisted in your final choice.

The choice of a career is a momentous decision. Stevenson wrote a sarcastic essay concerning this, saying that it was impossible to choose one's career, that one's previous life and environment and opportunity settled the matter. He pointed out that from the moment one first makes steps and enters upon one's education every moment is directed. Certainly as a child one is told to go out to play, to come in, to wash one's face and hands, to eat like a gentle-

*A lecture to students of the Harvard Medical School, Boston, February 24, 1930.

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man, and to say "Yes, please" and "No, thank you". Evidently we are given little practice in choosing. Yet even as a child, momentous decisions are made. No one tells my children to throw rocks or to hit their brothers with baseball bats, and yet as surely as Apollo will drive his chariot into the heavens tomorrow some new and tear-resulting decision will occur. We are not here to argue about free will. We will admit the difficulty of seeing the world about us as it really is, but we are, I hope, courageous and intelligent enough to attempt to decide what we shall do with our lives.

The Academic Career in Surgery is an exacting one. Let no one contemplating such a career feel that the devotion to a Hospital and teaching life is one which becomes, with time, simplified and somewhat protected. It is in fact just the opposite. In the first place, there are one's professional responsibilities to patients and their families, a responsibility which is the chief concern of all who practice the art whether within or without the hospital. In the case of the Academic Surgeon these responsibilities may extend to all patients on the surgical service whether or not he has given these patients his personal attention. Moreover, his professional responsibilities are tremendously increased by his position. His colleagues, not only in the medical school but in the university, feel they can turn to him for advice concerning even the simplest matters. His trustees may disturb his most precious hours to inquire what should be done about the cook! And medical men of all types and from any distance may demand his services. Thus the Academic Surgeon entering upon what he may have imagined was a life free from professional responsibilities finds that his very office exerts the opposite effect and robs him of the hours he may have anticipated for intellectual pursuits.

Secondly, there are always students. And these will be both pre-graduate and post-graduate, for the interne and resident house staff, the laboratory workers, and junior colleagues are in an even more important sense students. This responsibility will be greedily accepted since it is always one of the desired and expected opportunities. This matter concerns the proper curriculum for the surgical students, the selection of teachers in the many courses, and the arrangement of clinics and of materials in laboratory courses. A deep interest in the proper relation of the courses in surgery may lead to a desire for more whole-hearted changes in the entire curriculum which may require an immense amount of labor. Fortunately the work of the surgeon is of a practical nature so that he is less apt than his more philosophical colleagues to be drawn into such affairs. Moreover, it is not the function of a medical school to turn out surgeons. That is a post-graduate matter and so long as the graduates of a medical school are grounded in the principles of Surgery, have learned to care for the common forms of trauma and sepsis, know how to administer anesthetics, and know in what cases Surgery may be a wise therapeutic agent, that school will have accomplished its task.

The contact of the Academic Surgeon with his post-graduate students is far more intimate and will consume perhaps the greatest share of his time and energy. Not only are there the actual personal relations, but the whole matter of the arrangement of his house staff, the length of service, the relation of pupils within his service, their vacations and their increasing responsibilities must be attended to. I am a great believer in precept and example as the best way for teaching practical affairs, and therefore I consider that any arrangement which allows one's pupils to share completely in one's daily work is the most stimulating and satisfactory method of exposition. Gradually in the operating room, at the bedside and in the laboratory these graduate students take up ever increasing responsibilities, they share more and more in the system which makes the whole structure possible and with these increasing efforts they begin to show that independence of thought and action, as well as satisfactory technical development, that brings its real reward to their teachers. This is the system of apprenticeship in modern dress and is the only method of education that has survived intact throughout the ages. It may seem laborious, but there is no method which may be substituted.

Now I must interject a word of warning regarding administrative matters. It seems that our great country has gone mad over administration and organization. We are threatened even with organization in our home life, in how we shall eat, drink and dress. As a race we seem to have lost sight of the fact that it is through the efforts of individuals that progress is and always has been made. To be sure, organization and applied science made the Panama Canal possible, but that organization was entirely dependent for its efficacy on the brilliant labors of a few individuals, notably Walter Reed and Jesse W. Lazear. Now this fetish of organization has invaded our universities which have always been a stronghold for the individual. Should the Academic Surgeon show any aptitude in organization he may be called to sit upon innumerable committees where his time will disappear like water in a leaky vessel.

Then there are hospital affairs, the purchase of new equipment, new appointments, vacations and substitutes, annual reports to write, and finally discussions with trustees. Trustees of Hospitals are, as a rule, recruited from the best of our citizens; they have accepted their posts in a spirit of public service and devotion to the highest ideals of society. But they naturally are unacquainted with medical affairs. They see their institution running well with a high, perhaps national, reputation; they cannot visualize

the importance of new and expensive equipment or service without a great deal of education. They do not appreciate that modern medicine dates back only to Pasteur, that the great share of all practice, both medical and surgical, dates from our knowledge of bacteriology, and they cannot appreciate the enormous changes which are constantly arising in medical science. Like other property-holders they are naturally conservative, and therefore prefer to let other hospitals try innovations first. Thus, the education of one's Trustees may usurp a considerable share of one's time and energy. Yet this effort is of vital importance, for to keep abreast of modern medicine, to utilize for the good of patients and students the constantly accumulating valuable scientific data necessitates changes in both personnel and equipment.

Finally, there is one's own desire to advance medicine. No one, presumably, enters upon an academic career in medicine unless he is imbued with the spirit and ambition to improve upon medical knowledge as it is. Certainly no one should be offered a high academic post unless this ambition is a part of his make-up and unless his works have given evidence of such ability.

Much has been written and said regarding the qualifications that go to make up the ideal Professor. It is certain that this position in surgery requires something more than proficiency in the art; in the physician it requires something beyond the ability to diagnose and treat successfully, and in the surgeon something more than the ability to operate with dexterity and safety. Certainly it requires teaching ability. But, in addition to proficiency in the art and the ability to teach, a professor must be one who also is trying to improve the science and art in which he works. We have seen enough of successful practitioners of medicine and surgery who have utilized their teaching positions to increase their practices and who, when they are gone, have left neither pupils nor works which have furthered the advancement of the field in which they labored.

When all this is completed, when the Professor has finished his ward rounds or operations for the day, when he has given his classes and cared for his patients, when he has finished committee meetings with Trustees or Faculty, when he has attended to the enormous correspondence dictated by such demands, and when he has perhaps stolen an hour or two for pursuing in his laboratory that which lies nearest to his heart, then he is free. But he is free only from physical labor, for in the few moments left of such a day he must make every effort to keep abreast of the rapid and continuous advances in the stream of medical knowledge. His readings not only will be on the problems which concern his patients and his own particular endeavors in the laboratory but must cover, at least superficially, the basic sciences of medicine in a very complete fashion. He certainly cannot afford to have a medical student bring before his group the matter of a new function being ascribed, let us say, to the cortex of the adrenal gland without his having first covered this matter in his reading and having formed at least a balanced opinion as to what the new discovery is worth. One must remember that medical students, though they do not necessarily read everything, occasionally dip into medical literature. One must also foresee the problems which arise in a student's mind when, fresh from his pre-clinical training, he enters into a study of disease in patients. Thus I recall well a third year medical student, fresh from his training in bacteriology, who learned that bile split the pneumococcus very efficaciously and who could not understand why physicians did not either wash out the lungs of patients suffering with pneumonia with bile or inject bile into the consolidated lung itself. I dare say that a great many of the ideas which have resulted in forward advances in medicine have come to the people, now credited with having made new and startling discoveries, from medical students or from their associates. You will perhaps recall that the two Hunters, John and William, fell apart late in life through a furious difference of opinion as to who really did the important work on the Circulation of the Placenta, published many years previously by William, the elder brother. Both were gifted men: the elder a polished, learned and popular physician; the younger rather a scamp in his youth and, at the time the paper was published, an assistant to his older and more learned brother. It may be true that, though the elder Hunter published this work in his name, the original observations which directed the final paper came from the younger and, at that time, certainly less dependable brother.

So much then for a glimpse into the academic life in Surgery. There may be conveyed to you, even by such a brief and simple image, the impression that it is not a sinecure, that perhaps after all those who, to you, may seem to sit on the higher seats pay for their position each day. Certainly it is my experience that,—contrary to what one might expect, namely, that an academic life would free one for intellectual repose and the possibilities of long periods of thought and discussion with one's colleagues in allied fields,—the academic life in medicine is quite the opposite. There is unquestionably more time for repose in a practitioner's life, and certainly much more time for such matters in the life of those who enter one of the medical sciences.

What, then, can be said in favor of such a life? Presuming that those who elect such a career enter upon it with the idea that they will be able in such a life to leave something of permanent value to medicine when they are gone, I think one may say this: that, in spite of everything that has been said here and elsewhere, the

immense opportunities for observation of suitable cases and the tremendous stimulus which comes from contacts with students are opportunities for thought and action almost unequalled elsewhere. It becomes largely a matter of whether one can stand the pace. One need not, of course, try to do everything as we have outlined it. One may retire, so to speak, within one's shell and not bother with the betterment of one's environment, leave the Trustees alone, neglect the students and spend one's time doing whatever is nearest to one's heart, either on the wards or in the laboratory. Such a life, however, cannot be held up as the ideal one for those who choose such a career and are rewarded with the opportunities which it offers. Indeed those who do not live up to all the requirements of practice, education, both within and without the profession, and investigation will fail to fulfill the obligations pressed upon them.

Now what are the rewards of such an existence? Of the richness of the rewards in this life there can be no doubt, but it is difficult to state them in any order representative of their worth and value. From what I have said, however, it may seem, and be quite true, that the chief reward may be counted in the success and development of one's pupils. A person whose time is so entirely absorbed by pressing matters for daily settlement must necessarily make his contributions through his disciples. The ideas which arise in his mind through his multitudinous contacts and which may come from his reading, from attending medical meetings or from his students will be handed on to certain of his pupils for further perfection and investigation. This, in turn, will develop the pupil. And according to the number and variety of such ideas and the ability of the academic man to stimulate students, there will arise about him a school of medicine or surgery. Such schools have constantly arisen about the greater luminaries in medicine in the past and in this country are perhaps best exemplified in the schools for medicine and surgery which were created by the late Sir William Osler and the late William Stewart Halsted. You have, in turn, seen developed in connection with your own Professor of Surgery, Dr. Harvey Cushing, a modern school practicing, with amplification, the methods and philosophy handed down to Dr. Cushing from Professor Halsted. In the creation of such a school the academic mediciner may, indeed, find this chief satisfaction. The late Francis Peabody had created about him a group of able and distinguished disciples who, had he lived, would probably have brought to his name the great credit which his teachings justified. But, in addition to the education of disciples and the pleasure and happiness to a master of seeing his disciples go out into a medical life well equipped to achieve success, there will be other means of satisfaction. Thus an individual will share in the building up of the Medical School in which he works and will glory in the success which comes to his Faculty. He will be stimulated by the increasingly better type of students who come to him and will play his part in making medical education always better so that the public will be safeguarded and also so that he may live up to the ideals of the Hippocratic oath. Yet, in addition to these types of satisfaction he will of course be able to accomplish some individual work of experimental type. Here he may find the greatest satisfaction. We are all constructed differently and what is meat to one man may to another be poison, but it is safe to predict that every man in academic medicine has at least some ambition to accomplish individual advances himself. Finally, the individual in academic life will have that happiness, which may in many cases supersede all else, of being able to care for and to assist a great number of stricken individuals. No one in medicine can escape from the satisfaction which goes with grateful patients and, though people may talk glibly about their experimental endeavors, there can be no doubt that their hearts and minds will always respond to the opportunity to alleviate suffering. Herein, to a considerable extent, lies the satisfaction of the practice of medicine, and no person in academic life in any of the clinical branches of medicine can succeed who does not respond to such human instincts.

Such being the academic life in Surgery and its rewards, you may well demand the pathway that best prepares one for such a vigorous existence. At this point let me assure you that there is no one course which, if followed, will always qualify one. Men are born, not made. Teachers assist in the training of great men but certainly do not engender greatness through their own abilities. In cases where great schools have developed about certain individuals, the acumen of the chief in choosing from a large number of applicants those individuals who show promise and are, therefore, to be permitted to work with him has probably played the larger part in his widely accepted abilities as a teacher. This selection of men is, indeed, a very difficult matter and no one has ever evolved a system which can be reduced to logic. For example, in this University there is a great school of Law and another of Medicine. For both of these schools there are over six hundred applicants a year. In the Medical School rigorous methods of selection requiring an immense amount of work are resorted to and, finally, one hundred and twenty-five individuals are admitted to the School in the fall. On the other hand, the qualifications for entering the Law School are quite simple, and practically all candidates up to a certain time and number are accepted. The excess in the Law School, which has at times amounted to several hundred, is then weeded out at the first fall hour-examinations. The very fact that these two great schools in a single university cannot agree on a satisfac-

tory method of selection is the best proof of our difficulty. Perhaps this will be of solace to you in the future should some teacher with whom you desire to work turn down your application. You may even console yourself with the thought that the poor chap didn't know any better!

But even if there are not pathways that will insure the attainment of your goal there are at least certain experiences through which you must pass. Firstly, you must become expert in the art of surgery. There can be no exceptions to this demand. Fortunately, though fads and fancies are as rife in medical education as in the matters of female attire, the methods for learning the art of surgery have not been changed from the days when man first practiced the letting of blood. The only way to learn a practical art is to practice it with one's hands. Practice alone makes for perfection and no amount of book learning or laboratory experience can replace this practice in handiwork. It is true that some men are more apt at learning surgery than others, that experienced people can, with a certain amount of assurance, predict that such and such a person can never become a surgeon. Others will acquire in one year what it takes another man five years to learn. Whether any particular one of you is fitted to practice surgery is a matter which you probably know already. Surgeons are usually neat, fastidious people, a matter sometimes expressed in their attire, though, in spite of what Shakespeare said about clothes, the apparel does not always express the inner man. Certainly one must be of the type that derives satisfaction from doing things with one's hands. However, most people like to do things with their hands. It is perhaps a primitive urge; certainly all children have it, though it need not necessarily represent in the adult a childlike mind. In fact it is the same spirit which enables the sculptor, the painter, the architect and the violinist to reach the highest peaks of success in their arts.

The minimum time required to receive a competent training in the art of surgery is probably not less than five years. This means, in relation to our modern hospitals, an interneship, an assistant residency and a period as resident in some University Hospital. Where one achieves this experience is a matter of some importance, for in one place surgical procedures may be done merely to accomplish the day's work, whereas in another place they are accomplished by people anxious to teach others and to point out lessons, both in the art and philosophy of surgery, which will broaden a man's outlook at the same time that he acquires practice in the art. Moreover, there are certain things to be said about continuity of service in this period of training. Most people who are seriously interested in teaching have a feeling of respect and devotion for their disciples of much the same quality as the disciples may feel for their chief. It is obvious that the longer the pupil remains with his teacher the more interest the teacher will show in him and, as a result, the more the pupil will benefit. This will be true as long as we are simple human beings, and must be accepted as a fact. There are, on the other hand, certain advantages in moving about, in being interne in one place and assistant resident surgeon elsewhere, provided both teachers under whom one works are of the best type. But there is the disadvantage that, in the case of the people who go from clinic to clinic, they may never stay long enough to have the chief of that clinic focus his interest seriously upon the individual pupil, and thus the greater benefits of teaching are really lost, or at least diminished in value. Moreover, it is certain that if one remains for a long period of time in a single clinic and becomes entirely familiar with the hospital and its functions, he can find ever increasing responsibilities and opportunities for work. Under such circumstances of long residence a pupil wins greater confidence, is given greater responsibilities, will be given the opportunity to teach, and will perhaps share in the investigations carried on by his own chief. The mental stimulation from such contacts cannot be equalled by any amount of moving about.

But even if a man has mastered the art of surgery, let us say, in the first five years after graduation from Medical School, there is much else he must acquire. In this period of five years he should also have acquired a considerable experience in teaching. He will have taught both students and nurses and, from my experience, I am glad to say that the opportunity to teach nurses and also to learn from them during this period of association in teaching may be, to a young surgeon, one of his greatest periods of stimulation and education.

Our young academic surgeon is now equipped with both the art and some teaching ability. In a former period of medical progress he would have been considered a fit candidate for academic life, but the competition for such posts has recently become greatly intensified and it has appeared, and quite properly so, that other qualifications must be at least dormant in our young embryo surgeon. He must have had a certain experience in laboratory and investigative methods. To acquire this, not less than one year is required, and better, two years. If he has never been well grounded in pathology, one year might, with considerable benefit, be spent in a pathological laboratory. But even beyond this, he must have experience in pure experimentation. He must have learned the methods by which one may attack problems which arise in the clinic, problems frequently put to him by his students. This year in experimental work, moreover, will afford him, if taken perhaps between his period of assistant residency and residency, a period for prolonged reading and study and for thoughtful contemplation of the profession in which he works. Life in the clinic

is not conducive to intellectual effort. Every moment of one's time is directed by the exigency of the environment in which one finds himself. One must do this or that because the patient's condition requires it. Decisions are easily made and do not require, as a rule, great thought because the rules for action have already been established. In fact, too long a training in pure clinical endeavor is probably a detriment to one's mental abilities and there should be breaks from time to time in any such type of work. Moreover, a year spent in a laboratory, particularly if one be given a post which makes one responsible for running the laboratory, is an enormous advantage later on. It is a difficult matter in a busy laboratory to administer affairs; to keep a technician, a secretary and two dieners always satisfied and working; to provide animals and materials not only for one's self but for other workers who are privileged to work in the laboratory; and, finally, to learn how to accomplish much on an always too meager budget. This training should prove to be valuable experience, for these are lessons in administration that daily beset the office of the academic surgeon. Moreover, if such a year is sandwiched in between the period of assistant residency and residency our candidate will have greatly enlarged his mental horizon and will benefit to a greater degree from the clinical opportunities to which he now returns.

We have thus outlined the period of training, taking at least six and probably seven years. At the end of this period we should find our young academic surgeon well trained to face whatever may come in his career. He should then be able to operate with a meticulous, careful and satisfactory technic. He should be thoroughly qualified to teach others in the art of surgery and he should be quite ready to take on any share of the education of students and nurses. I believe that a man at this period of life is probably a better teacher for medical students than later on, and lucky are the students who have available the enthusiasm and abilities of such highly trained young men. Our academic surgeon at this time will also have some experience in administrative affairs and should be able to take over major responsibilities in these lines.

The other qualifications which will lead to his success, such as his ability to get on with other people, to stimulate his colleagues, to inspire confidence in his patients and trustees, and to work out important problems in the advancement of the medical science, must perforce vary with his personal qualifications. These are things one is largely born with, but the association with men who have succeeded and who fulfill all of these demands will certainly give to our young surgeon great benefits.

We have now finished with this hurried picture. It should suffice, however, to give you an idea of the complexity of a University career and the fullness of such a life. It is one rich in great opportunities. Each individual will doubtless work out his own salvation according to his lights. One may devote his life largely to clinical matters, another may be chiefly interested in the philosophy and the improvement of medical education, a third may confine himself almost entirely to his laboratory investigations. In each case the decision to live such a life is probably made unconsciously. One always tends to do the thing one likes to do. This is certainly best for all concerned, for each teacher stimulates his colleagues and students by different methods and the fact that he is doing what he wants to do tends only to increase his abilities as a teacher. In some cases it may be necessary to spend some years in training junior associates to do most of the routine work before the chief can retire, at least with credit, to work out his own particular salvation.

Finally, a word of warning. There arose not long ago a tendency to isolate the clinician and the investigator. It was the logical result of the introduction some forty years ago of full time teachers in the pre-clinical sciences. This idea has done much harm. In the first place it led students to feel that it was not worth while to be inquisitive and to investigate unless they were to become full time workers in the medical sciences. Again, it split the clinicians and their pre-clinical colleagues into warring camps and in many a faculty in the last twenty years the battle for control between the two groups has waxed hot and furious. Due in part to the great gifts of the full time pre-clinical workers to medical sciences and equally to the carelessness of the clinicians in fulfilling their teaching obligations, there finally resulted the idea of full time clinical posts in medicine and in surgery. No one interested in improving medical education can doubt the wisdom of at least the heads of the senior clinical departments devoting their time almost entirely to their Hospital and University obligations. The philosophy beneath this point of view has accomplished an immense benefit. It is, indeed, this change that makes it possible for me today to utilize such a title as *The Academic Career in Surgery*. There have been many mistakes in the application of this idea. Stringent rules regarding an individual's life and actions, unless they fit in completely with his ideas and environment, are sure to cause difficulty. We have all seen similar difficulties in relation to the attempt to apply to life the very desirable philosophy of temperance expressed in the eighteenth amendment of our Constitution.

We can now fortunately view this matter from a fair perspective. We can see that to accomplish satisfactorily an academic career in surgery one must devote practically every waking moment to this task, but it does not necessarily follow that seeing a private patient and assuming full responsibility for this patient is a sin

or will destroy one's capacity for full devotion to the highest ideals of an academic life. In fact, I am sure, though I am but a poor and perhaps indifferent practitioner, that the stimulation which goes with such contacts, the fulfillment from time to time of the sacred personal relations of doctor and patient are among those factors most certain to increase both one's devotion and one's abilities in academic life.

You Harvard students, who live and work in an atmosphere as ideal as exists today for the education of doctors, hardly need to have heard me point out what most of you already know. We have now returned where we began. We now find clinical and pre-clinical groups working in harmony. The clinician has returned to his work as an observer, scholar and investigator. All members of the profession, no matter what their field, are imbued solely with a desire to forward the amelioration of suffering through the prevention of disease as well as through better care.

There will, of course, be but a few of you who will attempt the career we have outlined. But the main body of you will, in practice, continue as observers and recorders of valuable medical data. The obliteration of disease has by no means been bequeathed to a single group in medicine. Whatever walk of life you accept, your medical school will expect you to make full use of the education it now gives you.

I hope I have not infringed upon the teachings of any of your instructors. If I have they, knowing my desire to be of assistance, will probably forgive me. If what I have said has been of assistance to even a single student, I shall be immensely pleased.

THE HUSBANDRY OF THE HOSPITAL*

BY M. F. FALLON, M.D.†

IN his charming and cultured book *Aequanimitas* Sir William Osler relates how entomologists aver that in every pestilence-stricken colony of ants there is one the special instinct of which is to set to work, feed and save the survivors and, in a word, "to put all to rights." The distinguished doctor is addressing a group of nurses and pointing the moral of the scientists' discovery as regards the nurse's place in the sick-room. Without wishing, however, to diminish the glory and dignity of the nurse's prerogative, I should like in this paper to have the entomological fact and its moral application do service for everybody connected with the husbandry of the hospital. Hence, I would have it apply to both patient and official; thus, in a more detailed and itemized statement "to put all to rights" will be the duty and the pleasure of doctors, nurses and providers of the hospital, on the one hand, and of the patients, poor, middle-class and rich, on the other.

Obviously, any exhaustive treatment of these several functioning departments in the ménage of the hospital is out of the question in the time allotted to the reading of this paper. Therefore, this discussion must reduce itself to a consideration of the patient in the hospital and particularly and primarily the patient from the middle-class station of life. Rich patients, it is axiomatic to note, afford the hospital no problem. They are a great asset: they pay well and in season and thus enhance emphatically the proper and prosperous husbandry of the hospital. Nor do the poor perplex the hospital officials. As a rule they are humble and grateful, modest in expectancy and content in correspondent attainment. It is the patient of the middle-class, however, who offers the greatest problem in the best coöperative management of the institution, in its fullest realization of successful husbandry, invoking and involving a proportionate collaboration of all the aforesaid factors that go "to put all to rights."

No new ground is broken in this discussion of the middle-class patient problem. It is a problem as perennial as others which vex the medical world—as that, for example, of the social and sociological dilemma of the young medical student who, having early espoused the muse of medicine for his life's mate, very early also finds another lass knocking at the portals of his heart for her meed of permanent affection; or as that of the passing of the old family doctor of former days. "Where are the doctors of yesterday?" I often marvel how some such ballade-refrain as this has escaped the genius of a modern François Villon, Austin Dobson or Andrew Lang. Only this December, R. le Clere Phillips discusses the middle-class patient in the *North American Review* in his article: "The White-Collar Sick", whilst but a few months ago Dr. William Mayo contributed his views on the same subject to a symposium on Medical and Surgical Economics held under the auspices of the American College of Surgeons, at the Clinical Congress in Chicago, October 14-18, 1929. Moreover, this problem has already inspired several of America's great hospital corporations to establish endowment or other funds for its tentative and, it is to be hoped, final solution.

The middle-class patient presents a problem to most hospitals for several reasons. First of all, often his attitude of mind is utterly out of measure with his aptitude of money. Possibly he has never been in a hospital before and, what

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is worse, he has never even visualized himself in terms of such a situation. He has been of ordinary means, but whatever the limitations of his circumstances, he has had the privacy of his own home to hide them from the eye of the garish day. But at last he is in the hospital and for his own sake or that of his family, and because of a certain pride, human respect and false respectability, he insists upon having the best and nothing but the best the hospital has to offer. And the best, be it noted, does not signify any better substantial medical diagnosis and care than the poor receive, nor do the wealthy, it is well to add, meet with any essentially better medical attention than the middle-class or the poor. But the best, as the middle-class patient tenaciously translates it, means that he have, come weal come woe to his peace of soul and pieces of gold, what the rich and the rich alone can pay for with financial ease and freedom from monetary embarrassment. He must have private room and bath, a nurse by day and one by night and so on to the nth power of improvidence. Alas! there has not yet broken on him Hamlet's philosophy of life: "I could be bounded in a nutshell and count myself king of infinite space." Nor has he reflected that some of the best surgery of the late World War was done not in magnificently appointed rooms nor in well-caparisoned hospitals but rather in very meagre medical shacks of mushroom origin: sprung up in a night, not like the walls of Thebes to the sound of Amphion's melodious lyre but to the monotonous rumble of Mars' incessant cannon-boom.

> "Pygmies are pygmies still
> Tho perched on Alps,
> And pyramids are pyramids in vales."

A hospital, like a college, is mainly what its brains, its principles, its essential apparatus and its human sympathies are, rather than what its sumptuous rooms and luxurious apartments may distract us into believing it to be. We must not mistake the wings on Mercury's sandals for Mercury himself. Substance is of much more vital import than accidence.

It is clear, then, at the outset that the first concern of the hospital is to strive with kindness and tact to moderate the very intelligible yet unnecessary demands of the middle-class patient. And, generally speaking, such patients are amenable to the sympathetic counsel and exhortation of the attending doctor, especially when the patient realizes that an unadulterated altruism prompts the advice. Of course, the doctor or his representative in the office must be alert to show the advantages, for most middle-class patients of the small wards for two or four occupants where isolation will not beget irritation, lonesomeness or unfounded fears and suspicions, and where a trained nurse may serve two patients at the expense of one. All this, therefore, to gently and firmly save the patient from himself and his unwittingly exorbitant ideas; all this on the part of the discerning doctor, coöperating nurse, docile middle-class patient "to put all to rights". A prominent divine recently remarked that some men first begin to look up when they are on the flat of their backs in the hospital. Assuredly, the middle-class patient who early learns the fitness of things for his spirit and his purse has at least begun to look up.

Having seen a way to save the middle-class patient from himself, what is our humiliation to have to admit an occasionally urgent need to save the same patient from the abuse of having the hospital oversold to him. But I dismiss this abuse with quoting what Dr. William Mayo says on the subject:

"This supersalesmanship is sometimes seen in hospital management. The patient is placed in surroundings which, however much they may appeal to his aesthetic sense, are above his needs and have no value in relief of the condition from which he is suffering. In other words, to make the hospital self-supporting and perhaps to leave a margin, and with a view, too, to keeping the nurses employed, the hospital, speaking of it as an agency, often shows too much salesmanship and too little humanity. . . . That some hospitals in their financial distress have turned to methods of raising money which are unjust to the patient is undoubtedly true."

And when the middle-class patient is saved from himself and in some cases from the supersalesmanship of the hospital, is that all? Is the problem of the middle-class patient properly and completely solved? Is the hospital on the highway to happy husbandry? I fear not. Further direful influences are at work on the middle-classman's ideals today than those merely accruing from family pride or personal improvidence. False prophets are abroad in newspapers, fallacious philosophies, in sinister political designs, in perverse propaganda of perilous economies, lopsided insurance emphasis and the incubus of the installment habit; and the result is that the middle-class patient, when he comes to his bed of sickness, has often a very much malformed mentality. What, for instance, may we expect of him if he has drunk deep of the pagan gospel that "self-denial is no longer a virtue" as preached by a popular press in full-paged block-typed print? What though there was a weak qualification in the way of a warning to provide for the future if the whole purport and atmosphere of the advice were spend and spend and keep spending? We know it is bad art and, therefore, unethical, so to contrast vice and virtue that sympathy is with the former. So, too, with such a periodical's admonition: you can't megaphone *waste* out of one corner of the mouth and whisper warnings against *want* with the other. Certainly the victim of such advice will be no secure provider against the rainy day of hospital expense.

Again there are those people (so hard to understand) who are quick to insure themselves against death but never against sickness. "Eat, drink and be merry, for tomorrow we die" is their text; never "eat, drink and be merry, for tomorrow we diet." They forget that the shroud has no pockets and that the pajamas have. All this by way of a pleasantry since the old Latin poet asks: "What forbids us from teaching the elements by aid of a few crusts of cake", sugar-coated truths, as it were; but solemn, stern and often sad realities underlie this protest, realities that make the middle-class man the problem he is when the hospital catches up with him.

But, what, it will be logically inquired, have all these pitfalls of malign character influence on the middle-class patient got to do with the proper husbandry of the hospital? The answer is at hand at once in the age-old medical adage: *salus aegroti suprema lex*, "The patient's health is the first law" of the hospital. In other terms, the patient's composure, his equanimity of spirit, his freedom from worry are imperative if doctor, nurse and treatment are to meet with success. And so, if he be worried about hospital expenses, time lost, years of savings gradually slipping through his fever-enfeebled fingers, how can these requisites be realized? This is tantamount to asking, how can the first law of hospitals, the health of the patient, be assured? It is superfluous to put the final, all pertinent question, how can worry be wanting where waste, improvidence, extravagance, false norms, lack of proportion, all the fruits of life of false family values, popular literature's philosophy of prodigality, etc., have run rampant and riotous?

Then is it to be concluded that when we have wrapped the middle-class man round with all manner of prophylaxes against the besetting devils of prodigality and improvidence, and have made him a better patient and hence a greater helpmate in the husbandry of the hospital, that all our financial handicaps have volatilized and gone off in air? Far from it, for the best of hospitals look for other means of carrying on besides that of rightly placing its patients: the poor in their quarters, the rich in theirs and the middle-class in theirs. "A hospital is a community asset and not a profitable business," says Dr. William Mayo and this dynamic diction brings us to the last point of discussion for this paper, namely the up-keep of the hospital, or, who are the providers for the hospital? Evidently the providers are of two classes: those within the hospital—the doctors who, often by great sacrifices in the way of free service, do much to keep the proverbial wolf even from the hospital door; the nurses already spoken of above; in many hospitals, devoted religious who give their life to the cause for no other temporal emolument than their daily bread; and, finally, the patients who pay in proportion to the size of their pocketbooks. Providers outside the hospital will be, naturally enough, former patients. True it is that a hospital is the one Alma Mater that seems to have neither alumni nor alumnae reunions but, if gratitude still thrives in the hearts of humanity, former patients who may have been treated as this paper has advocated will be the hospital's best benefactors, either directly, or indirectly through their friends. And their benefactions will be money, a great desideratum, or the encouragement and auxiliary of a just, sincere and benevolent good word for the hospital's cause. Among these benefactors may be big donors, who may give in money media or may furnish rooms, technical apparatus or, what is often least thought of by the uninitiate in this field, may save talented physicians and surgeons from the penurious career of a desultory community service and financially encourage them and their talents. By founding adequate salary endowment for this purpose, opportunities for self-improvement and research may be afforded doctors who may ultimately become great magnets of medical appeal in their hospitals.

A felicitous charity, worthy to be held up as an inspiration and exemplar for others, obtains to the great advantage of one of our local hospitals in Worcester. The St. Vincent Hospital Aid Society has for the past four years given the hospital $20,000 a year. The individual annual donations have ranged from $25 to $2500. This records a good experiment tried and not found wanting. It is well to remember, also, that a number of small yet constant donors is often a safer asset than some one or two large donors.

The community, therefore, should be the spontaneous partial support of so sacred, so serviceable a necessity as the hospital. Yet this is no plea for exclusively state or federal control of our hospitals. It were a sorry day for this glorious land of freedom and initiative if such things should come to pass. Inevitably in their wake would follow political interference, the herding of doctor and patients, the dilution of life's greatest tonic, competition, an epidemic of standardization and a host of equally dangerous bi-products. For this reason we fail to wax interested in those who tell us of Soviet Russia's doings in the way of government control of the hospitals. As in the case of an ancient pagan nation's offerings, so with respect to Soviet Russia we say: Timeo Danaos et dona ferentes. It would be tragic to deliver one of our dearest pledges, the health of our fellowmen, over to a Soviet inspired system of care.

These processes of providing for our hospitals, as well as such others as endowment policies against the day of ill-health, hospital savings-banks (in Massachusetts alone for 1929 $31,000,000 were piled up in the Christmas saving-banks), parochial hospital societies, will help the hospital authorities greatly toward the pay-

ing of their expenses, even as they will engender habits of foresight and thrift in the lives of *all* who are *potential* and *many* who become *actual* inmates of the hospital.

"Ill husbandry braggeth to be with the best—
Good husbandry baggeth up gold in his chest"

is a couplet I remember seeing years ago on the walls of a bank. Any endeavor "to put all to rights" in the husbandry of the hospital and particularly in the status of the middle-class patient will do well to adopt the same lines for its slogan.

FRACTURES OF THE ASTRAGALUS

BY EDWARD J. SAWYER, M.D.*

LITERATURE on fractures of the astragalus is meagre and clinical results are scarcely satisfactory. I am reporting herewith three cases which I hope add to both.

These fractures result after falls from a height, the phalanges and metatarsus striking and transmitting the weight of the body. Were the heel to land with the foot at right angles, the os calcis would sustain the weight and the injury. In this instance, there is a lever action on the os calcis due to the location of the ankle joint over the calcaneo-cuboid articulation, whereas, the astragalar injuries are impactions due to the direct transmission of weight from the first three phalanges and scaphoid through the astragalus to the tibia.

However, this line of transmission cannot be perfectly true and with astragalar-scaphoid joint normally tilting at an angle of forty-five degrees, the dorsal surface of the neck of the astragalus will suffer a severer degree of impaction than the plantar. In consequence, there is a flattening of the longitudinal arch of varying degree with varying degrees of subsequent disability, unless this is recognized and corrected. This degree of upward, or angular, impaction may be great enough to cause an actual impingement of the astragalar-scaphoid joint to the tibial-astragalar with consequent limitation of dorsi-flexion, a most disabling condition.

I have found bony union to occur as satisfactorily and as rapidly as its neighbor, the os calcis, and with less bony overgrowth. Dr. Ariel George reports one case to me in which there was a complete separation of the two fragments at the time of injury in May, whereas subsequent roentgenograms in August disclosed no evidence of a fracture line or injury. There is, therefore, less need of operative interference on this account. The most important thing to be looked for clinically and in the roentgenogram is the amount of unequal impaction and next, the degree of total impaction. Then, from this, the course of treatment may be decided.

If the operative course be decided upon, there are several factors. If either the impaction be so severe that there is marked limitation of the ankle joint or if the fracture extends into the joint, it may be wise to remove the astragalus in toto and dislocate the foot backwards. If the impaction is second degree, an osteotome thrust in the upper half of the neck and rotated enough to restore the original slant of the astragalar-scaphoid joint is sufficient.

If the impaction is of the first degree, a slight displacement of the tilt of the joint, manipulative treatment under ether will suffice in the early stage, the foot placed in a cast in comfortable plantar flexion. Care must be taken to avoid drop foot in this position.

CASE 1. Walter G. 28. Clinically exhibited nothing more than the usual reaction of any fracture. There was shown by roentgenogram an impaction of considerable degree of the neck with little or no change in the relation of the axis of the neck and not enough proximity to the tibial joint to have any callous impingement. Cast applied with the foot at right angles and inverted. Returned to his usual work in five months with no subsequent complaint.

CASE 2. Samuel M. 25. Presented a second degree flattening of the longitudinal arch. The other foot was normal. A roentgenogram showed an upward tilt of the distal fragment of a few degrees. He was manipulated under ether. The foot was stretched in plantar flexion and a cast applied. This was bi-valved and physiotherapy started early. The cast was removed in eight weeks. He returned to heavy work in six months. A longitudinal arch support was supplied, which I presume, he is still wearing.

CASE 3. John B. 42. Presented a second degree flattening of the longitudinal arch and markedly limited dorsiflexion. Roentgenograms showed an impaction tilted almost enough to cause an approximation of the astragalar-scaphoid and astragalar-tibial joints. An osteotome was inserted in the upper half of the fracture line and the distal fragment rotated to nearly normal position. Postoperative treatment was similar to the above case. He complains now of occasional pain and swelling in wet weather around the ankle, but one year after the injury is working steadily.

*Sawyer—Formerly Assistant to Dr. Frederic J. Cotton. For record and address of author see "This Week's Issue," page 646.

A SUGGESTION FOR THE CONTROL OF PUERPERAL SEPSIS

BY H. A. CHASE, M.D.*

AS puerperal sepsis still exists both in home and hospital obstetric practice to an extent which gives it the major rôle in the production of the present puerperal mortality, it seems justifiable to present any experience which seems to promise light and hope for the prevention of this condition. From observation of the obstetric records of the Goddard Hospital for the ten years ending December, 1929, interesting deductions come to mind which may be of service in working out help in this baffling problem.

This group includes 3770 cases, all deliveries beyond six months' pregnancy, exclusive of Caesarean sections, and embraces all types of vaginal delivery; some with sufficient antepartum care and some with very little or no previous care. During the early years of this period sepsis of varying degrees of severity occurred sporadically at a fairly even average of ten to fifteen cases a year. Sepsis here means fever in the puerperium of 100 to 101 of at least 3 days' duration, not accounted for by infection outside the genital tract. This occurred a little more frequently in primiparae and in operative deliveries than in multiparae and normal deliveries, but the difference was not marked. Some of the severest cases occurred in multiparae after rapid normal labors without vaginal examination or any vaginal manipulation during delivery. The infections were considered to be in the vagina, cervix, uterus, or parametrium and tubes, as in those cases where a co-existent perineal repair was present this repair generally healed well.

In 1925 there were 15 cases, several of marked severity and thirteen of these occurring from April to October. In the later months of this year following this epidemic, definite changes were made in the usual technique of delivery with the hope of lessening the sepsis incidence. In 1926 a very marked improvement occurred, there being but four cases during the year, all of these being operative, two of which also had manual extractions of the placentae. In 1927 and 1928 there were similar incidences of four cases each year, and in the only severe case there was a very definite break in technique. In 1929 there were but two cases, both mild. Thus in the four years following the change in technique, with an increasing number of deliveries each year, there were but fourteen cases of sepsis as compared with a yearly average of ten to fifteen in the previous years.

TECHNIQUE

The changes in technique come under two heads:

1. General improvements in the details of preparation for delivery.
2. Posture as related to entrance of bacteria to the birth canal.

PREPARATION OF THE PATIENT

The changes here consisted of more care in the usual details, such as the use of a sterilized bedpan, a lysol-soaked razor, special brush and soap for the shaving, a sterile enema tube, and special care of the nurses' hands for the preliminary preparation. The old method of sterilizing the delivery field by soap and water scrub just before delivery had always offered the chance of washing bacteria into the vagina, particularly in multiparae with gaping vulvar orifices. To avoid this and to give a better bactericidal effect, a modified mercurochrome technique was adopted. After wiping the skin surrounding the vulva with ether, 2% mercurochrome dissolved in 50% alcohol and 10% acetone was painted on the skin up to the vaginal mucosa; then a 4% watery solution of the same drug was swabbed into the folds of the vulva and a short distance into the vagina. This same watery 4% mercurochrome was also applied to the vulva and vagina preparatory to all vaginal examinations during labor, as the alcohol-acetone solution is too irritating to the mucosa for such use.

POSTURE DURING DELIVERY

Although efficient preparation of the delivery field would prevent the carrying of skin and vulva-bacteria into the genital canal, such treatment would have very little effect upon the bacteria present in the cervix and depths of the vagina and none upon those introduced from without during and immediately following delivery. This factor seemed particularly potent in multiparae with chronic infection of cervical glands following previous laceration and in primiparae with cervical infection from other causes; here fresh tears would open directly into infected areas of the cervix. Also the factor of contamination of traumatized vulva and vagina by bacteria from the air infected by coughing, talking and sneezing should be considered, as also contamination by breaks of technique by doctor or nurse.

The rush of baby, amniotic fluid and blood with the delivery of the baby and the further cleaning out process occurring with the delivery of the placenta, probably pretty thoroughly clean out most of such potential bacterial invaders. However, if there were bacteria remaining after such a process, particularly with a torn infected cervix, there would be the possibility of their penetration into the uterus particularly by fissures and abrasions in the lower uterine seg-

* Chase—Visiting Physician, Goddard Hospital, Brockton, Mass. For record and address of author see "This Week's Issue," page 646.

ment and by the placental site, unless they were immediately and continuously washed from the birth canal. This danger should be greatest soon after the delivery of the placenta. Generally no attempt has been made during the delivery and immediately after to secure adequate drainage. Moreover, repaired perineums in the horizontal position further tend to dam back a small pool of retained fluid, from which easy penetration to the uterus is possible, as is also lymphatic absorption through traumatized vaginal areas.

To counteract such invasive tendencies and in general to secure good drainage of the birth canal during and following delivery, a head to feet slope of the delivery table was provided by raising the head of the table 6 inches from the floor by blocks. This position was maintained at all times during and following both normal and operative deliveries, and when ready to leave the delivery room, the mother was placed in a bed with a similar elevation of the head. Thus the only time that an upward vaginal current could occur would be during the transfer from the delivery table to the bed, and to avoid this the transfer was made with the upper body somewhat raised. The bed elevation was maintained for three days and then lowered to the horizontal.

This technique has been carried out continuously since 1925 with the results previously stated. In one case, a postpartum hemorrhage, the foot of the bed was elevated because of acute anemia and this patient developed a severe sepsis, of course not chargeable to the change in technique. All others have been delivered in this position without undesirable features. We feel that something in our changed technique may have contributed to a reduced incidence and severity of puerperal sepsis. Whether this factor is a general improvement in the details of antepartum preparation, a different delivery field preparation, or the different principle of genital tract drainage, is an open question. We offer the last two factors, however, as good suggestions in general delivery technique.

AMPUTATION (LOWER LEG) SUBSEQUENT TO INFANTILE PARALYSIS

BY CHARLES F. PAINTER, M.D.*

RARELY does the orthopedist come upon adults who have suffered from poliomyelitis in infancy or childhood and who have so little power left in the muscles of the lower leg that they possess very slight control over the movements of the foot at the ankle joint and tarsus and in whom the circulation is so poor that the foot and leg are cold even in the summer. In the winter, in spite of all sorts of extra care, these patients are annoyed, if not incapacitated by chilblains. They are quite likely to have had offered them some one of the arthrodesing operations at the tarsus, or an astragalectomy, which gives them a makeshift of a foot upon which to bear weight, but of course does nothing toward bettering the circulatory situation. A case of this sort presented itself, two years ago, in the person of a man, thirty-nine years of age, who had been getting along under a rather severe handicap in walking; an infantile paralysis had deprived him of practically all power in the flexor and extensor groups of muscles in the right calf, leaving him only a little power in the posterior tibial muscle and obliterating it altogether in the peroneals, so that the foot was pulled over into a varus position, without equinus. The foot was cold to touch below the knee and was more or less diffusely cyanotic with patches of bright red color interspersed throughout the bluish areas. There were no gangrenous patches, though one or two of the smaller toes were so blue and cold it seemed scarcely probable that they could long remain in that condition and continue to be viable. On palpation it was extremely difficult to be sure of pulsation in the large arteries of the lower leg. The patient had had his shoe built up to make it possible to put the foot down flat on the floor and he could walk quite a distance (a mile or so) with the aid of canes but with a good deal of fatigue. Because of his lack of exercise he was getting too heavy. He was looking forward with dread to the cold weather for the chilblains had been very painful the winter before and he had lost a good deal of time from his work because of them. The power in the biceps femoris and quadriceps of the thigh was good and the chilblains were confined to the lower third of the leg and the foot. It seemed as though an artificial limb for the lower leg could not be worse to walk upon than his own foot and it certainly would not be subject to chilblains. For these reasons he was advised to have an amputation, rather higher than the conventional "point of election" but not so high as to prevent the procurement of a good socket. The advice was accepted and the amputation performed. The wound healed promptly, in six months the patient was walking on his artificial leg, and he has been entirely satisfied with the result. He uses no cane and upon one occasion he took an eleven mile walk with no discomfort and with less fatigue than he used to experience with much shorter walks.

It would seem that in adults, who, for one reason or another have a poor walking mechanism at the ankle and tarsal joints, but whose thigh muscles are strong enough to flex and extend the leg, and especially if there is circulatory disturbance, lower leg amputation offers better function than a badly paralyzed leg with ankyloses or deformities.

*Painter—For record and address of author see "This Week's Issue," page 646.

VERMONT STATE MEDICAL SOCIETY

FRIDAY MORNING, OCTOBER 11, 1929

SECRETARY RICKER: I think we would like to hear from Dr. Bowers.

DR. BOWERS: *Mr. President and Members of the Vermont State Medical Society*, I assure you it is a great pleasure, as I tried to say last night, to come here and meet you gentlemen and ladies to whom we have been sending the message every month. The courtesies which have been extended to us are very much appreciated by the Massachusetts Medical Society.

It has been the desire of a certain number to try and consolidate the members of the New England medical societies and to have a New England Medical Council which consists of delegates from each medical society composed of the presidents and secretaries and delegates at large from each of the separates societies. That Council will meet this afternoon, and its deliberations will be published in the *New England Journal of Medicine*, so that you may all know what is being done. We take great pleasure in publishing your proceedings, and carrying the message to your officers and everybody interested.

There is only one suggestion, and that is that there should be a much larger amount of material of a personal nature in the section devoted to your affairs. In the West the medical journals are putting in personal items of very great interest. If there are marriages, or other personal affairs in the lives of medical men, they should be recorded in the medical journal. All the other district societies should know about your district, or county societies, so that it is extremely desirable that you get as many personal items in your section of the *Journal* as possible.

We are very much interested in developing general interest in the *Journal* through larger subscription lists. The Massachusetts Medical Society is not making a cent out of the business it is doing for this or any other society, but is doing that work practically at cost, and is losing a little money on it. The Massachusetts Medical Society is glad to do that work, however, as one of its functions is trying to have some immediate communication with the different state societies. There is no selfish motive in this effort.

SECRETARY RICKER: I thank you for that suggestion of sending in notices. I have two good correspondents, Dr. Russlow and Dr. Lane. Subscription blanks are at the desk, and it would aid the *New England Journal of Medicine* if you would fill out and sign them.

PRESIDENT DALTON: We will proceed with our program, which is another of these symposiums that have been on the program in recent years. The one this morning is on Diseases of the Respiratory Tract, and the papers are supplied by our friends from New Haven. The first number is entitled "The Common Cold", by Frederick N. Sperry, M.D., Clinical Professor of Laryngology, Yale School of Medicine and Laryngologist-in-Chief, New Haven Hospital.

DR. SPERRY: On behalf of the delegation from New Haven I want to express to you our pleasure and appreciation of the honor of being able to present to you a symposium on the diseases of the respiratory tract.

THE COMMON COLD*

BY FREDERICK N. SPERRY, M.D.†

THE common cold is not only the most common disease of the respiratory tract but of all diseases. Not only is it the most common but, allowed to run its course untreated, it is frequently the beginning of more serious conditions.

In singling out this one of the many diseases of the upper air passages I am not forgetting that in a Symposium on the Respiratory Tract consideration should be given to the pharynx, naso-pharynx and accessory nasal sinuses and the complications arising from the inflammation in these regions, but only one subject can be chosen and the most common is the most logical.

In one year in the offices of the Metropolitan Life Insurance Company with 6,700 clerks there were 6,233 days of lost time on account of colds. Other organizations give statistics that would lead us to believe that the loss of time is even greater. Various estimates of the value of lost time from colds in this country vary from one half billion to one and one-half billion dollars annually. This does not take into account the loss of efficiency of those who do not lose time nor any of other costs incident to sickness.

Because it is so unnecessary in this place, we will omit pathology, diagnosis, symptomatology and complications, thereby gaining time for better consideration of what remains, so that our

*Read at the Annual Meeting of the Vermont State Medical Society, October 11, 1929.

†Sperry—Clinical Professor of Laryngology, Yale University. For record and address of author see "This Week's Issue," page 646.

title would better read "The Causes and Cures of Common Colds".

The respiratory functions of the nose are to warm and moisten the air we breath. This task requires varying quantities of blood flowing through the cavernous tissue of the turbinates and to accomplish this we have the vaso-motor system acting by reflex from the skin or mucous membrane. If this reflex is delicate we say that the individual is sensitive to cold and the reverse condition we call hardened.

Rapid change in temperature is a shock to the nerves and the response in the nose is a reflex, which in the sensitive, is overactive partially paralyzing the contractile power of the turbinates giving no opportunity for a normal reaction. An excessive contraction of the cavernous tissue is followed by an excessive dilation and a cold is ushered in unless the normal condition can be reëstablished. The difference in temperature may be a draft of air or seasonal change. The winter is the season of colds but the question is often raised whether the cause is winter weather or our over-heated and over-dry houses. Long hours in hot, dry, smoky, ill-ventilated rooms unfit the mucous membrane to respond normally to an exposure of cold air.

Government statistics are fairly complete and would indicate that the mortality in respiratory disease, especially influenza, is greater when there is great humidity and severe cold. Moderately cool and relatively dry weather has been marked by lessening of colds. The geographical studies of Ellsworth Huntington of Yale are at some apparent variance with these statistics. His studies however have more reference to civilization and general health. The hardening effect of cold has been noted in arctic explorers and in woodsmen who tramp in the snow and are frequently wet and fatigued, yet they are free from colds. The records of the Metropolitan Life Insurance Co. show that in winter indoor, sedentary workers have nine times as many colds as taxi drivers and four times as many as soldiers in the United States army.

Over-eating and over-drinking not only give a bad taste in the mouth the morning after but also show a marked congestion of the mucous membrane of the nose. The nose mucosa also shows congested turbinates in chronic intestinal toxemia and with this condition there is a tendency to acute rhinitis.

Connellon and Dwyer of New York have studied colds as related to intestinal toxemia and have found in the intestine, amines, acetone and formic and oxalic acids. The most important in their opinion is histamine. Histamine is an amine derived from the amino-acid histidin. Both are products of bacterial action on protein in the presence of sugar. More than twenty different bacteria have been found capable of producing histamine. In dose of 1/300 of a grain it is fatal to a guinea pig in from three to five minutes.

The formation of histamine is accompanied by an acidity in the large intestine and it has been shown that hyperdermic injection of 1/180 of a grain of histamine in man causes an increased secretion of hydrochloric acid in the stomach. Much more observation is necessary to arrive at a true evaluation of the relation of intestinal toxemia to colds.

Closely akin to the intestinal toxemia cases are those sensitized to foods, pollens, animal emanations, dust and bacterial proteins. The hay-fever patient has frequently the common cold added to his already irritated nose.

There are other causes of sensitization to colds, many of them poorly understood. Among these are errors in metabolism, a decrease in the alkalinity of the blood and the misfunction of the endocrine glands.

A predisposing cause is deviation of the nasal septum sufficient to cause stenosis in one or both nostrils. Also predisposing are false points of contact, and large turbinates or turbinates which have lost part of their ability to contract. Adenoids and diseased tonsils both by obstructing the airway and by harboring infection are frequent causes as is purulent disease of the sinuses. A latent inflammation in an ethmoid cell may easily develop into an acute rhinitis.

The mucous membrane impaired from within and from without falls an easy victim to bacterial invasion. The mouth, tonsils and nasopharynx teem with germs but the nose is sterile and experiments would seem to show that the normal nose is resistant to the implants of a large variety of germs.

No specific organism has been found as the cause of colds. Recently filterable viruses have been thought to be etiological factors but some investigations would seem to prove them harmless. Robertson and Groves collected the nasal discharges of eleven patients suffering from acute coryza and after diluting with water, passed the solution through a Berkefeld filter. The noses of one hundred volunteers were sprayed with the filtrate and only a few colds resulted and these were regarded as caused by factors independent of the experiment.

During the first twenty-four hours of an acute cold, bacteria are seldom found, the most common being the staphylococcus albus and this is not usually regarded as the cause of coryza. The bacteria of the purulent stage vary in different epidemics. In epidemic colds pneumococci are the most common. In one series of 65 colds 43 were pneumococci of which 35 were type 4. The influenza bacillus is probably a frequent factor but it has been well proved that it does not cause influenza. Hemolytic streptococci cause infections of great virulence and yet sometimes they are found in normal throats. Fortunately they are relatively infrequent in the common cold. The viridans is rare in the nose and also the mucosus. Staphylococcus aureus and albus, the Friedlander, pyocyaneus bacilli

and the micrococcus catarrhalis are common and are probably secondary invaders. The diphtheroids are occasionally an etiological factor. Dr. G. B. Wood cites the scattering of a broken culture tube containing diphtheroid bacilli and within 24 hours every individual in the laboratory had an acute coryza. In discussing the bacteriology of colds he concludes that "as yet there has not been found any specific organism which can be considered as the etiological factor in acute rhinitis. It is probable that a number of different bacteria are responsible in different epidemics and in different individual cases. The possibility of there being a filterable virus as the specific cause of rhinitis is interesting, but up to the present time the evidence is too conflicting to accept it as a fact."

Preventive treatment involves keeping the whole body fit. Indoors our patients are protected from exposure and automobiles and elevators rob them of exercise. As a result they are soft and when tired or exposed to cold the reflex shock to the nasal mucous membrane is too severe to permit the proper reaction and a cold begins.

For proper development of the vascular system exercise is necessary. If this is walking it should be brisk enough to accelerate the heart beat. Dr. W. L. Culbert has emphasized the value of breathing exercises to prevent colds. He points out that flabby turbinates can be contracted and regain their ability to react normally, by breathing exercises. The principal point is forcible exhalation which acts as massage. He instructs his patients to breathe in and out as they go through an exercise with the arms and body as when using a buck saw. This is fatiguing and is better when modified so that we have three times as long for inspiration as for expiration. This may be done by using one of the exercises common in dumb-bell drill. The hands are closed and held against the chest. We forcibly exhale as the body is bent forward and the arms extended to below the knees. During inhalation the body is brought to the erect position while the hands come back to the chest. Inspiration is completed as the arms are extended laterally and brought back to the chest. Fifteen or twenty such breaths suffice if done two or three times a day.

Another precaution against colds is the cold bath. The good one gets depends upon the reaction. If after a bath we are cold or in the least exhausted more harm than good has been done. A modified bath, perhaps only cold water to the back of the neck, may be of much greater value.

Fashions among the ladies have taught us a more rational winter dress so that now woolen underwear is happily out of style. In winter most of us wear lightweight clothes, summer underwear and low shoes, and have fewer colds. It seems quite logical when our houses are of summer temperature to wear summer clothing adding outer garments when going out into the cold. We are living in the day of fresh air appreciation, which has done wonderful work in tuberculosis and has made many weaklings strong. But it is doubtful if it is wise to spend an evening in a warm room fully clothed and then sleep out-of-doors in winter even if appropriately clad. A bald head or sensitive nose usually requires shelter. Of course we cannot have too much fresh air.

Vaccines have been popular for more than a decade and observers report widely varying views as to their value. Dr. William H. Park concludes that vaccinated cases showed no immunity that could be attributed to the vaccine, and Dr. Beaman Douglass remarks that "this method of preventing colds is about to die a natural death, and soon there will be nothing to do but give it a decent interment and erect a suitable monument to its memory". Many of us still use vaccines with satisfactory results. From a fairly large experience I should judge that it makes little difference what is used so long as it is a foreign protein. If used during an acute cold the dose must be small and more frequently given.

One of the first steps in the prevention of colds is the correction of defects and disease in the nose and throat, such as the removal of diseased tonsils and adenoids and of nasal foci of infection when possible. The use of galvano cautery along the lower border of the inferior turbinates has been one of the most useful procedures in my hands to do away with some of the swollen turbinal tissue thereby relieving nasal stenosis. The relief of nasal stenosis is certainly one of the keys to the situation.

Statistics concerning the aborting of colds are inaccurate for there is no surety the cold would have developed. Experience however has convinced us that many colds have been broken up. A cathartic and quinine or Dover's powder often serve well and a Turkish bath, followed always by a period of rest is frequently efficient. Rest is usually necessary. Many "catch cold" only when tired and recover quickly on going to bed for a day or two.

Among the treatments popular a year or two ago is chlorine gas inhalation. It has not fulfilled our expectations but is of value. Unfortunately some cases are made more uncomfortable so it should be used cautiously at first. Elaborate apparatus is not necessary. A simple method if using a bath room of ordinary size for an inhalation chamber is to add five grains of potassium permanganate every fifteen minutes to a dish containing concentrated hydrochloric acid. The amount of chlorine necessary depends upon the size and tightness of the room, as well as upon the number of persons present, the clothing worn, the furnishings and the moisture. Dampness rapidly absorbs chlorine, and tarnishes any metal fixtures. Treatment should last an hour and chlorine must be added frequently to keep the concentration con-

stant. As chlorine is heavier than air, an electric fan should be used to properly distribute the gas.

In the early stages of acute rhinitis, for a child one year old, hourly doses of two or three drops of spirits of nitrous ether are useful. When there is restlessness or cough, one or two drops of paregoric are well combined with it. Tr. belladonna one drop every two hours, is of advantage in the stage of serous discharge, and syrup of hydriodic acid, ten drops every four hours, after the serious stage.

Among adults aspirin and the other analgesics are useful for the relief of headache and muscular pain, but their routine use in rhinitis is unmerited. Hexamethylanamin is given by many but I have never known it to help rhinitis, acute or chronic. Belladonna is best given in the combinations known as rhinitis, coryza, or bronchitis tablets. They shorten the period of serous discharge and as some patients find this the only disagreeable stage the remedies have the reputation of breaking up the attacks. Iodides are of service as soon as the discharge becomes mucoid. A glassful of water, hot or cold, to which a half teaspoonful of bicarbonate of soda has been added may be taken every hour, and in my experience is the most useful internal treatment.

It must not be forgotten that in early childhood a head cold is usually inflammation of the adenoids. Local treatment is best applied by the instillation of drops. Liquid petrolatum is useful as nose drops and in many cases the addition of menthol, camphor, or iodine helps. ℞ Iodi, .01; Mentholis, .03; Camphoris, .03; Liquid alboline, 30. Met Sig. 5 drops in each nostril two, three, or four times daily as required. Drops of one of the organic silver solutions in strengths varying from 10% to 40% while sometimes irritating, are often of real service.

For cleansing the child's nose saline irrigations are useful. The treatment is routine in some hospitals. Among the rhinologists the practice is usually tabooed because of the otitis media which sometimes follows.

For adults, in the early stage of acute rhinitis an effective treatment is the packing of the nostrils with 25% argyrol solution on cotton, after the tissues have been shrunken by the use of cocain and adrenalin—but usually it is better to delay local treatment until the nasal discharge has become mucoid.

When there is mucopurulent discharge some cleansing treatment is advisable. Normal saline, or one of the many commercial preparations, may be used as a douche or by snuffing. Perhaps better for the few who can do it is the gargle which cleanses the naso-pharynx and the nose. While gargling, the mouth is closed and the head is thrown forward and down, the nasopharynx and nose being thereby effectually cleansed. The blowing of the nose following the introduction of the fluids into the nasopharynx by any method has frequently forced infection into the Eustachian tube. A good practice is to ask the patient to refrain from blowing his nose for at least two minutes. It is well also to caution our patients that blowing should be done by allowing one nostril to remain open while the other is held closed.

Most of us prefer spraying which is safe and fairly effective, while for office treatment suction through a small canula is useful. Snuff composed of equal parts of boric acid and borax provokes secretion and helps restore the normal function of mucous membrane. Used as a spray a three per cent. aqueous solution of ephedrin relieves the stenosis and assists the much needed cleansing of the nose.

When the turbinates are swollen, the discharge thick and scanty, considerable relief may be obtained by nasal tampons such as 25% ichthyol in glycerine. It is well also to treat the nasopharynx with applications of silver solutions or menthol preparations or by insufflation of boric acid. The use of a mild mentholated spray, following what is sometimes a disagreeable treatment is comforting to the patient.

Massage is one of the oldest and simplest methods of treatment. It is not generally prescribed by physicians and has been adopted by the cults, who, operating under the names of osteopaths and chiropractors are becoming a large factor in the treatment of disease. Massage of the nose, face and neck relieves the congestion in the upper air passages while the same treatment applied to the back of the neck exercises a far wider vasomotor control.

Electrotherapeutics and light therapy are illustrated by a rebellious case of rhinitis which came under my observation. The cold lasted more than three weeks with no indication of sinus involvement. The nasal discharge was mucopurulent, of average quantity in which nonhemolytic streptococci were found. The principal complaint was nasal stenosis which alternated with too much air space, and at times both nostrils were occluded. A high frequency electrode was introduced slowly as the inferior turbinal contracted, and was allowed to remain five minutes, followed by a three-minute application of ultra-violet light. The other nostril received the same treatment. The effect was shrinkage of the turbinals lasting four to five hours. After three days of treatment the rhinitis had improved, convalescence was established and all treatment stopped.

Over-heated houses or atmosphere impregnated with tobacco smoke, furnace gas or noxious odors retard recovery from rhinitis. Protection from drafts is advised for those who have not been hardened to withstand changes in temperature. Our patients do best in warm moist air of uniform temperature. Cold air especially at night, predisposes to laryngitis in cases of nasal stenosis. Where a cold has lasted several weeks

or where there have been several reinfections the best treatment often is a change in scene.

The average head cold is of short duration and comparatively few seek the physician's aid, thinking he has little to offer in addition to their own knowledge. To stimulate an interest in therapy I have laid stress on the newer treatments feeling sure that some are of real value. If we can shorten the duration of the common cold, and this seems possible, we will have made a tremendous saving for our patients.

The final word should be concerning the colds we catch during the treatments. Some of our patients are inconsiderate and many quite unavoidably cough in the doctor's face. Special care of some special device should be used for protection while making applications.

In summarizing we may conclude that colds are a bacterial invasion of the nose and that many different bacteria are capable of causing rhinitis.

Colds are frequent in winter probably because our mode of living renders the nose unfitted to withstand the shocks of exposure to cold.

Impaired health in general and diseased conditions in the upper air passages predispose to acute coryza and should be corrected.

Treatment should be the whole body rather than the nose alone.

Nasal treatment should be alkaline and mildly antiseptic and specially directed to the relief of stenosis.

The digestive defects such as intestinal toxemia should be corrected as far as possible.

The general strength should be conserved especially by sleep. The use of a hypnotic when necessary is advised.

Two or three quarts of water and three or four teaspoonfuls of bicarbonate of soda should be taken daily.

Fresh air at night is desirable but the patient should not be exposed to the cold raw night wind. Many do better with all windows closed.

MISCELLANY

VERMONT DEPARTMENT OF PUBLIC HEALTH

Communicable diseases reported during the month of February are as follows: Chickenpox 251, diphtheria 5, measles 44, mumps 5, scarlet fever 47, smallpox 14, typhoid fever 1, whooping cough 32 and tuberculosis 15.

The Laboratory of Hygiene made a total of 1510 examinations classified as follows:

Examinations

For diphtheria bacilli	231
For Widal reaction of typhoid fever	22
For malarial parasites	0
For tubercle bacilli	253
For evidence of syphilis	359
For gonococci in pus	103
Of blood for contagious abortion in cattle	191
Of water, chemical and bacteriological	28
Of water, bacteriological	105
Of milk, market	138
Of milk, submitted for chemical only	9
Of milk, submitted for microscopical only	1
Of foods	22
Of drugs	3
Of for the courts, autopsies	1
Of for the courts, miscellaneous	2
Of animal heads for evidence of rabies	0
Miscellaneous examinations	42

Twenty-nine cases of syphilis and 47 cases of gonorrhea were reported to the Division of Communicable Diseases: 216 Wassermann outfits and 186 slides for smears were sent out from this Division.

The director of the Division of Tuberculosis visited several towns in the state for the purpose of talking to groups on the subject of tuberculosis; 12,000 copies of the *Modern Health Crusader* were distributed.

The State Advisory Nurse of the Maternity and Infancy Division visited 11 towns in which she talked to high school girls, Parent-Teachers' Associations and other organizations.

SOCIETY NOTES

The regular monthly meeting of the Bennington County Medical Society was held Wednesday evening, March 12, at Hotel Putnam, Dr. John Trotter, president, presiding.

Manager George R. Bush and staff served an excellent dinner, after which James T. McKenna, M.D., of Troy, New York, read a paper entitled "Medical Legal Pitfalls." Dr. McKenna is a veteran in this specialty and has been present in many hard fought medical legal battles. He related several stories of incidents in his long career as a medical expert and told several stories in his own particularly humorous vein.

The local doctors present were Drs. John H. Trotter, C. S. Buchanan, C. W. Bartlett, H. S. Goodall, J. D. Lane, E. A. Tobin, F. E Dean, L. H. Ross, J. C. Armstrong, and J. R. Wilson. Adelbert W. Braisted was also a guest at this meeting. Those from out of town attending were Drs. J. T. McKenna, Walter D. McKenna, William Kirk and William Trotter of Troy, New York; Lucius A. Wing of New York City, Henry W. Eliot of Manchester, George A. Russell of Arlington, and Ellis Keller of Schenectady, New York. The dinner was given by Dr. Trotter who has recently come to Bennington to make his home.

The next meeting will be held in March at Putnam Memorial Hospital.

On February 20 Dr. Rogers of Pittsford presented the Chittenden County Clinical Society with a very interesting and instructive address concerning present day treatment of tuberculosis. His address was well supplemented with x-ray pictures.

On March 5 the Society was the guest of the Rutland Railroad Surgeons at their annual meeting held

at the Medical College in Burlington. The principal paper was by Dr. James N. Van Der Veer of Albany, N. Y., entitled "Traumatic Rupture of the Urethra Associated with Fracture of the Pelvis". Unfortunately Dr. Van Der Veer was taken ill just before the meeting was scheduled to be held and in consequence his assistant, Dr. John Horner (University of Vermont 1926) read the paper in a very gratifying manner. There were many slides illustrating the main points.

Dr. F. W. Sears is in St. Petersburg, Florida.

Dr. Harold Taylor of Burlington has retired from the Society, having moved to Hartford, Connecticut, where he is connected with insurance work.

Dr. L. R. Goodrich has also retired from the Society. He is now in Troy, N. Y., with Dr. Haskell, a former graduate of University of Vermont.

OBITUARIES

DR. ALBERT LAWRENCE MINER

In the passing of Dr. Albert Lawrence Miner, November 9, 1929, the state of Vermont lost one of her best known medical men, and the State Medical Association, one of its most valued members.

The town of Bellows Falls will be deprived of the valuable services of this splendid medical counsellor and skilled surgeon. Dr. Miner died at the Rockingham Hospital following an operation for acute pancreatitis.

The doctor was born in Chazy, New York, January 26, 1869. He attended school there and at Westminster, graduating from the High School in Hinsdale, New Hampshire. He received his medical degree from Baltimore Medical College in 1894.

He practiced for a time in Westminster, was in Government employ at Indian Reservations in Oklahoma and Minnesota for two years afterward locating in Bellows Falls where he practiced until his death. He was a member of state and county medical societies, having served as president of the former in 1913.

At the time of his death he was a member of its Medico-legal committee. Fraternally he was a Woodman, an Odd Fellow, Rotarian, a member of the Country Club, and an active worker in the Congregational Church.

He was one of the founders of the local hospital, a member of its staff and always worked hard to advance its best interests. Dr. Miner was a genial, kind-hearted man, with high ideals which he exemplified. He was married October 9, 1895, to Leila B. Jaquith, who survives him with three sons.

DR. EDGAR J. FISH

Dr. Edgar J. Fish of South Royalton died January 25, 1930, at the home of his son in Canton, Mass. Dr. Fish was born in Washington, Vermont, February 7, 1851. He graduated from the University of Vermont Medical College in 1874, standing fourth in his class. He settled in Tunbridge, practicing there for thirteen years, then moving to South Royalton, where he continued the practice of medicine until his death. Dr. Fish served as a member of the House of Representatives in 1902, and the Senate in 1904, acting as presiding officer in the Senate much of the time.

He was a Knights Templar, a Shriner and a thirty-second degree Mason. A devoted student of medicine, Dr. Fish became a skilled diagnostician, and his opinion was valued by prominent medical men throughout New England.

He is survived by his wife, Eliza Lyman Fish, and two sons, Dr. J. E. Fish of Canton, Mass., superintendent of the Massachusetts Hospital School, and Professor Harold D. Fish of Washington, D. C.

DR. HARRIS R. WATKINS

Dr. Harris R. Watkins died February 18 after a short illness, in Boston, Massachusetts. Obituary services were held at his late home in Burlington, February 21, 1930. Dr. Watkins was born at Newbury on March 8, 1866. He attended St. Johnsbury Academy, and graduated from Dartmouth in 1888. His medical education was acquired in the Long Island Medical College and the University of Vermont Medical College, graduating from the latter in 1892. His professional activities were in Burlington. He was at one time adjunct professor of anatomy at the University of Vermont, attending and consulting physician to the Mary Fletcher Hospital, and attending physician and surgeon at the Fanny Allen Hospital.

RECENT DEATHS

Dr. E. R. Lynch of Brattleboro died January 16, 1930.

Dr. George D. Buxton of Proctorsville, Vt., died February 13, 1930, of angina pectoris, at the age of fifty-six years. He graduated from the University of Vermont Medical College in 1906. He had been Health Officer for the town of Cavendish for the past twenty-four years.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 16131

ABDOMINAL PAIN, JAUNDICE AND ASCITES

MEDICAL AND SURGICAL DEPARTMENTS

An American wood-heeler forty-seven years old entered through the Emergency Ward October 23 complaining of jaundice of three weeks' duration.

He dated the onset of his illness four weeks before admission. For two weeks before that, however, he had sharp pain which moved from the umbilicus down to the pubic region, occurring several times a day. This stopped with the onset of another pain which suddenly awakened him at two o'clock in the morning four weeks before admission, severe, piercing, well localized in the right nipple line midway between the umbilicus and the costal margin, steady, non-radiating and lasting about two hours. Accompanying this was pain in the back at the inferior angle of the right scapula of about the same severity. Soon after the onset he had "gas cramps" in the midepigastrium which doubled him up. In the second hour of pain he vomited three times, small amounts of material, the first time white, the second time brown, the third time mostly gas. Hot water bottles gave relief. The following day the doctor made a diagnosis of gall stone disease and gave him cream colored tablets which he took with relief. That day there was extreme tenderness in the right upper quadrant which persisted for six days. Three weeks before admission he noticed itching of his feet and his doctor noticed jaundice. This had steadily grown more marked. He believed it was a little better in the mornings. With it he had general itching, especially when in bed. He had felt quite tired ever since the original attack and thought he had been growing weaker. With the jaundice he had slight edema of the legs and ascites. He slept poorly. His hemorrhoids had been bleeding a little since the onset of the jaundice. His stools had been whitish and his urine coffee colored. He had slight diarrhea, one or two soft or watery movements by day and two to five at night. Two weeks before admission he took a dose of castor oil with relief to the diarrhea and improvement to his appetite for a while. A week before admission he had an X-ray examination. He vomited the dye given for a Graham test. A film of the gall bladder showed nothing. He was told that a gastrointestinal series showed his stomach in good condition but that there was a condition at one point in the intestines below the stomach which had caused him to be thin. Further medical treatment had no apparent effect. Two nights before admission he took a dessert-spoonful of sodium phosphate with relief to his diarrhea. The afternoon and evening before admission he had slight suprapubic pains similar to those a month and a half previously. He thought he had lost fourteen pounds since the onset of the illness.

His mother died at seventy of Bright's disease and arteriosclerosis.

In general he had always been healthy and vigorous. He had had the diseases of childhood, including scarlatina. At seven years he had an attack of inflammation of the bowels, congestion of the liver and hemorrhage of the stomach accompanied by jaundice and vomiting of coffee grounds material. He had malaria at fifteen, gonorrhea at nineteen, slight pleurisy at twenty-five and twenty-eight and gastritis at twenty-seven. He had several attacks of tonsillitis until he had his tonsils removed twelve years before admission. Two years later his nasal septum was removed. Seven years before admission he had a touch of influenza. A little over a year before admission his eleventh rib was loosened and ligaments torn in his back in an automobile accident. He kept his bowels regular with cascara because of piles, which he had had for perhaps thirty years. For twelve years he had urinated once at night.

Clinical examination showed a fairly well developed, poorly nourished man with evidence of loss of weight. Skin and mucous membranes vivid yellow, with scratch marks over the body, especially about the upper thighs. Several teeth missing, the rest ill kept. Apex impulse of the heart felt in the fourth space 8 centimeters from midsternum, coinciding with the left border of dullness one centimeter inside the midclavicular line. Right border 2.5 centimeters to the right. Supracardiac dullness 6.5. Pulses, arteries and blood pressure normal. Lungs clear. Abdomen distended. Umbilicus slightly protuberant. Dilated veins along the flanks and over the suprapubic region. Dullness in the flanks, fluid wave, tympany on top. Palpation of the viscera was difficult. The liver was not felt, but for three finger-breadths below the costal margin on the right there was a sense of resistance, some dullness to percussion and slight tenderness. Slight pitting edema about the ankles. Pupils equal, irregular, reacted normally. Knee jerks hypo-active. Rectal examination was not attempted because of several large external hemorrhoids, two or three of which were acutely inflamed.

Before operation amount of urine normal on

the two occasions recorded. Urine brown at both of two examinations, specific gravity 1.019 to 1.020, the slightest possible trace of albumin once, bile strongly positive at both tests, rare leukocytes at both. Blood before operation: 9,700 leukocytes, 81 per cent polynuclears, hemoglobin 90 per cent, reds 5,600,000, slight anisocytosis, platelets greatly increased. Hinton negative. Icteric index 65. Stools light yellow or white at three of four examinations, guaiac strongly positive once. Fasting contents of the stomach: 55 cubic centimeters of clear white material with a small amount of mucus, no free hydrochloric acid, total acidity 3, guaiac negative. Test meal at half an hour: 40 cubic centimeters of similar material with some yellow mucus, no free hydrochloric acid, total acidity 5, guaiac positive. Test meal at one hour: 8 cubic centimeters of clear white material, no free hydrochloric acid, total acidity 10, guaiac positive. Abdominal tap October 24: 2,000 cubic centimeters of bile stained fluid, specific gravity 1.014, 1,665 cells, 46 per cent red cells, 10 per cent polynuclears, 25 per cent lymphocytes, 1 per cent large mononuclears, 21 per cent epithelial cells. Clotting time 16 minutes, with calcium chloride 26 (?) minutes. Van den Bergh test, biphasic, 24.97 milligrams. Bleeding time one and one-half minutes.

Chart before operation not remarkable.

X-ray examination October 25. An unsatisfactory film of the gall bladder showed no visible stones. Examination with a barium meal showed irregularity of outline of the pyloric end of the stomach extending from the region of the sphincter for a distance of about two inches. The stomach was empty at six hours.

October 24 the liver edge was palpable three fingerbreadths below the costal margin, smooth, hard, not tender. The day after the abdominal tap a definite sharp liver edge was felt descending on respiration to 9 centimeters below the costal margin in the mammary line. The house officer did not make out a nodular outline. The visiting physician thought the liver was slightly irregular.

A surgical consultant thought surgery offered a possibility of relief. Another surgeon advised exploration. October 29 it was done. The patient did well except for rare attacks of nausea and vomiting after taking food or fluid. November 5 an abdominal tap gave 2,550 cubic centimeters of bile colored fluid, specific gravity 1.011, total leukocyte count 550, equal parts of mononuclears and polynuclears, many red blood cells. He had less abdominal discomfort after the paracentesis. The wound was clean and healing.

November 8 the patient complained somewhat of abdominal distention. He had periods of anorexia and mental distress because of the persistence of the jaundice. The urine continued to show large amounts of bile. November 9 following the removal of the through and through stitches the wound broke open down to and including the peritoneal layer. It was resutured under local anesthesia. The next day the patient was fairly well but much disturbed mentally. The van den Bergh biphasic reaction was 13 milligrams, hematocrit 57 per cent plasma. A culture of the tap fluid showed staphylococcus aureus and streptococcus hemolyticus.

The patient went gradually downhill and November 14 died.

Clinical Discussion

BY A. V. BOCK, M.D., AND
GEORGE W. HOLMES, M.D.

NOTES ON THE HISTORY

Dr. Bock: That lower abdominal pain is a queer symptom and one of which I can make nothing. We find in cases, for example, of partial obstruction of the colon due to carcinoma queer attacks of pain in the lower abdomen. But I cannot say more about the significance of this pain.

The second pain is of course the clinical symptom that offers a great many possibilities as to cause. The man who says the patient has gall stones has given a cause for the pain. But pain of this kind, as steady as this, without any wave-like variation, lasting two hours, is not a very common picture of gall stone pain. It may be that, but it makes one a little suspicious. Among the causes of this type of pain we think of perforated viscus. But ordinarily we do not expect pain to last two hours with that type of thing in the background. We could have pain of this character lasting as long as this from an ileus. Sudden strangulation of the bowel, an obstruction such as we see occasionally, could give pain of this character and duration. Acute pancreatitis could also give this picture. Acute pancreatitis I think produces about the most severe pain a patient can have due to any cause in the abdomen. It is more usual I should say for pain due to this cause to be referred to the left rather than to the right side. But its location on the right side would not rule out the pancreas as a cause.

If you see a patient who has been through such a severe attack of pain as this in a house of the kind this man probably had, where he is more or less isolated and cannot afford a nurse, instead of merely giving him some medicine it is always a wiser policy to send him in to a hospital where he can be under observation and attempt to find out what is wrong. He is too seriously ill to be allowed to stay alone. Constant observation and various types of investigation should be undertaken in an attempt to make a diagnosis.

Following this began what one would expect in an acute gall stone attack,—tenderness in the right upper quadrant suggesting acute cholecystitis. The onset of jaundice would make

one suspect that he had a stone in his common duct. General itching of the skin is characteristic of severe jaundice.

Diarrhea is unusual. Why has he diarrhea? We generally find just the opposite in patients who have jaundice. It is a little difficult to fit into this picture. It would fit into the picture of pancreatitis. Any major disturbance of the pancreas is apt to produce diarrhea.

It is interesting that they even attempted to do a Graham test on this patient with intense jaundice. Even if he had not vomited the dye or if the gall bladder had not shown a shadow, how much better off should we have been? I think it is a waste of money to attempt a Graham test with a patient of this type.

The patient's story of the findings of the gastro-intestinal series shows how much the patient understands what his doctor has told him. I do not believe the doctor told the patient he "had a point in his intestines below the stomach which had caused him to be thin." He probably did not take the time to explain what the patient had in terms the patient could understand. That is why we get these very bizarre stories of what doctors have told patients. We have to say things not once but at least three times in the simplest possible way,—then if the patient remembers it he is doing very well. Most patients ought to have a letter written so as to have down in black and white what the doctor did say and what he intended to do.

The past history has nothing to do with the present illness, though it is a queer mixture of events. This story of severe jaundice at seven years of age with inflammation of the bowels, congestion of the liver and hemorrhage of the stomach is something that I have never heard of in a child at the age of seven. If it were not for the statement about hemorrhage one might say the child had infectious jaundice, although that is rare at seven. I do not know what it means. The rest of the history has very little to do with the present case.

NOTES ON THE PHYSICAL EXAMINATION

The heart may be elevated merely on account of a high diaphragm due to distention or fluid in the abdomen. The findings in the abdomen are characteristic of free fluid, which in this case, at the age of forty-seven, of four weeks' duration, gives considerable evidence to make us think of cirrhosis of the liver, tuberculous peritonitis, carcinomatosis and Hodgkin's disease. Those are the possibilities which have occurred to me as things which might produce the amount of fluid that he has. Pancreatitis due to an inflammatory reaction set up about it does at times produce considerable fluid in the abdomen.

The urine shows very little. The blood findings are not significant. The icteric index shows a high grade jaundice.

The stool examinations are not very significant except that they show a nearly complete absence of bile. The positive guaiac reaction may be due to blood from the hemorrhoids. We occasionally have a positive guaiac test in the stool without ever knowing the cause. We attach very little significance to one stool examination showing blood.

The absence of hydrochloric acid in the stomach has an important bearing. It is of course a finding in carcinoma of the stomach; it fits in with that diagnosis. But it does not follow because the patient had no hydrochloric acid that he had cancer of the stomach. It is possible to have a reflex shut down on the secretion of hydrochloric acid. We know that 10 per cent of normal people have no hydrochloric acid in the stomach. He may have been one of that 10 per cent. We cannot say because of the absence of hydrochloric acid that he has cancer of the stomach. The findings would be more significant if histamin had been used in connection with the gastric study.

The specific gravity of 1.014 in the ascitic fluid is against an exudate. We have a definite cell count. I cannot see that it tells much about the etiology of the fluid.

Calcium chloride is supposed to shorten the coagulation time, but if you get a drop too much it is apt to send the coagulation time in the opposite direction. We cannot say much from one report.

DR. HOLMES: Such a defect as we have here in the pyloric end of the stomach in the absence of stasis is of course very suggestive of neoplasm. The deformity is annular and somewhat mottled. It is very unlikely that it is an ulcer. In that position ulcer would not fail to cause stasis. Another thing that could produce such a picture is spasm of the pyloric end of the stomach. There might be no lesion. As this man was quite sick when the examination was made and had fluid in his abdomen we cannot give as much weight to this examination as we would if he were a better subject. The picture is not characteristic. The edge of the shadow is rather smooth. It is not the exact funnel shape with scalloped margins that we see in cancer. If we knew that the findings were constant we should have to say that he had cancer of the stomach.

DR. BOCK: The fact that he has had no history of gastric trouble need not make us hesitate in making a diagnosis of cancer of the stomach in the presence of suggestive X-ray findings. We know cancer of the stomach can exist to an inoperable stage with no suggestive history. We have found it here when the patient has said absolutely nothing about his stomach.

The size of the liver is very much against a diagnosis of portal cirrhosis. It does not rule out biliary cirrhosis, but biliary cirrhosis at this age is fairly rare, and there is nothing else to go with such a diagnosis.

He died presumably of peritonitis,—the portal of entry through the broken down wound.

DIFFERENTIAL DIAGNOSIS

I find the attempt to make a positive diagnosis on this patient a difficult procedure. We could start off with a diagnosis of gall stones, and that sounds very well until we find that the patient has a large amount of ascites. That does not quite fit into any gall stone picture that I know about, so that if he has gall stones we must make another diagnosis also.

Cancer of the stomach. In favor of that are the X-ray findings. With cancer of the stomach we should have to say that we have direct extension to the pancreas producing blocking of the bile ducts or metastases affecting the bile ducts in such a way as to occlude them, and also metastasis to the peritoneum to account for the fluid in the abdomen. I suppose that is probably the most logical diagnosis.

In many ways the whole picture could be fitted into a diagnosis of pancreatitis. Pancreatitis may start with severe pain of this type and then if the damage to the pancreas and the neighboring tissues is extensive enough the patient may go downhill and die in three or four days in spite of everything that is done. Or the patient can develop a more or less subacute process and have it go along for weeks or even a month or two with fluid in the abdomen and a certain amount of jaundice but without jaundice of this grade. This patient is so highly jaundiced that we expect to find almost complete obstruction of the bile ducts. As far as this sudden attack of pain goes, the pathologist may not have any explanation for that. There may be pain such as that attack without gall stones, with nothing to be found except metastasis in the region.

I should say the chances are that the man has not got gall stones, but that the question is whether we are dealing with carcinoma primary in the pancreas or in the stomach. I certainly do not like to fly in the face of the X-ray Department and discount such findings by saying the stomach is negative. On the other hand I must say I do not very much like the diagnosis of primary cancer of the stomach in this case. I am scarcely willing to go on record by making a definite diagnosis.

A Student: There were positive guaiacs in the test meals.

Dr. Bock: Positive guaiac in the test meal and fasting contents,—that is pretty suggestive. Often it is due to trauma incident to putting the tube in and so forth. Primary carcinoma of the stomach with direct extension to the pancreas and peritoneum would go farther in explaining the whole picture than anything else.

INTERPRETATION OF X-RAY

The appearance is that of carcinoma of the pylorus.

PRE-OPERATIVE DIAGNOSIS

Carcinoma of the stomach.

OPERATION

Spinal and local novocain. Right paramedian incision. The abdomen was opened and a large amount of clear fluid aspirated. Around the stomach was a mass, apparently retroperitoneal tissue, involving the body of the pancreas, clearly a carcinoma. There were diffuse metastases throughout the peritoneal cavity. There were implantations in the pouch of Douglass which might have been felt by rectum. The stomach was not directly involved. However, there were implantations in the fatty tissue of the omentum near the pyloric end. A bit of suspensory ligament to the liver was excised, which showed implantation.

PATHOLOGIC REPORT

Adenocarcinoma.

CLINICAL DIAGNOSIS, POSTOPERATIVE (FROM HOSPITAL RECORD)

Carcinoma of the pancreas with metastases.

DR. A. V. BOCK'S DIAGNOSIS

Positive diagnosis not made.

ANATOMIC DIAGNOSIS

Carcinoma of the pancreas with obstruction of the bile ducts and peritoneal metastases.

Pathologic Discussion

BY TRACY B. MALLORY, M.D.

I think we did not commit ourselves at the time of the surgical report as to where the cancer was primary. At autopsy it was found to be pancreatic. The stomach was entirely negative. There was a large tumor occupying the midportion of the pancreas extending somewhat into the head and tail as well. At the head it had grown around the common bile duct, which was stenosed about the ampulla and higher up was greatly dilated. All the intrahepatic bile ducts were dilated. The ascites was due to numerous implantations over the peritoneal surfaces.

Dr. Bock: Were there no gall stones?

Dr. Mallory: No; and the degree of stenosis of the common bile duct was sufficient so that no gall stone could have been passed recently.

A Student: How common is carcinoma of the stomach in relation to that of the pancreas?

Dr. Mallory: Cancer is more than ten times as common in the stomach as in the pancreas, according to Ewing's statistics. The stomach is the commonest site in the body, certainly in males. We get a great many pancreatic cancer cases, however, in a hospital of this sort. That is not a fair cross section of the community by

and large. They are not readily diagnosed and tend to drift into a hospital of this sort. Cancer of the stomach is pretty obvious, and the cases do not come here.

A STUDENT: What about the liver?

DR. MALLORY: It showed marked bile stasis.

A STUDENT: Was there any infiltration to account for the acute symptoms?

DR. MALLORY: No.

A STUDENT: Does cancer of the pancreas cause anemia?

DR. MALLORY: Any type of cancer can cause anemia. Any type can run without anemia.

A STUDENT: Was the portal vein obstructed?

DR. MALLORY: One need not assume that the portal vein was obstructed to explain the ascites. With carcinomatous implantations on the serosa we usually get ascites, regardless of the primary site of the tumor.

ORDERS

October 23. Up as desired. High carbohydrate, low fat diet. Fluids ad libitum. Zinc oxide* wash to skin p.r.n. for itching. Stool to laboratory each day.

October 25. Sodium bicarbonate grains xx at once.

October 26. Fluids limited to sixty ounces. Epsom salts one ounce at bed time.

November 1. Morphia one-sixth grain s.c. (Order repeated.) High carbohydrate diet. Soap suds enema today.

November 2. One dram castor oil at once. One dram of sherry t.i.d. before meals. Morphia grain one-sixth s.c.

November 3 to 8. Morphia grain one-sixth s.c. (On three days given every three hours p.r.n.)

NOTES ON TREATMENT

BY DR. BOCK

The orders for treatment as given include a low fat diet. We know that fat cannot be saponified in the absence of bile salts, and for this reason, in the presence of jaundice, the fat content of the diet should be kept as low as possible, especially if we believe that obstruction of the common bile duct is complete.

For itching in cases with jaundice we have no successful treatment except relief of the jaundice. Starch baths, carbolic washes and sedatives may be tried.

Surgical exploration is warranted and should have been done much earlier. The longer severe jaundice is present the greater becomes the tendency for postoperative hemorrhage. If a stone is blocking the common duct, nature unaided might clear the passage, but the risk of delay and the uncertainty of the event preclude waiting. The condition demands surgical action. If pancreatitis is the cause of trouble, immediate drainage may be life saving. If cancer of the pancreas is found at operation, the sooner we know this fact the better. From any point of view there are cogent reasons for an early surgical exploration in a case like this. Nothing is to be gained by waiting for three or four weeks.

*Zinc oxide two drams, calamin two drams, phenol one-half dram, lime water to make eight ounces.

CASE 16132

SIGNS OF ACUTE INFECTION ASSOCIATED WITH RIGIDITY OF THE NECK IN A SCHOOLGIRL OF FIFTEEN

MEDICAL DEPARTMENT

A schoolgirl fifteen years old, entered January 21 complaining of headache.

January 18 she went to school feeling well. In school she developed headache beginning in the forehead but soon moving toward the occiput. Then she had a chill, followed by vomiting. The following day her neck became stiff. These symptoms became worse. January 20 she saw double. She had eaten nothing since the onset and had vomited most of the fluid taken.

She had had diphtheria and scarlet fever. She had taken no serum or antitoxin.

Clinical examination showed a well nourished girl in pain from severe headache. Throat and tonsils inflamed, tonsils ragged. Heart and abdomen normal. Breath sounds normal except over the right chest in the region of the second rib in front, where they seemed closer to the ear and approached bronchovesicular. Neck and spine stiff. Turning the head caused as much pain as bending it. Vessels of the left fundus slightly congested. Fundus appeared dull. Right fundus not examined on account of position. Movements of the eye full and steady. Objects appeared single, yet at times on looking to the side the patient complained of double vision not brought out on examination. Arm-jerks present but sluggish. Knee-jerks and ankle-jerks not elicited. No Babinski. No response on scratching soles. Positive Kernig.

Urine and blood not recorded.

Temperature 102.1° to 106°. Pulse 102 to 140. Respirations normal.

At half-past three a lumbar puncture was done. 50 cubic centimeters of cloudy fluid was obtained, initial pressure 650+, total protein 133, colloidal gold 0001123433, chlorides 432, sugar too low to read, Wassermann negative. Spontaneous coagulation occurred before the cells could be counted. Smear showed Gram-negative intracellular cocci, 600 cells. 30 cubic centimeters of antimeningococcus serum was given intraspinally. Within half an hour the violent headache completely disappeared and the patient felt very well. She gradually became drowsy and went to sleep. She could easily be roused at first. By evening, however, she could not be aroused by mild measures and did not feel the needle inserted for intravenous injection or for another lumbar puncture done at half-past nine. The initial pressure was the

same. The fluid was cloudier than before. 16,000 cells were counted from the first tube, 5,000 from the last, practically all polymorphonuclears. Serum did not flow in so easily as in the afternoon, and though the fluid dropped easily from the needle its administration was discontinued in view of the absence of pulse oscillations.

The condition did not seem dangerous in the evening. At half-past two the next morning there was a slight increase in pulse and a rise of one degree of temperature. Fifteen minutes later the respirations had become more shallow, though the rate remained normal. Within ten minutes the patient died. The body almost immediately showed discoloration in the dependent portions and over the chest and abdomen.

Clinical Discussion

BY WILLIAM D. SMITH, M.D.

The story of the illness up to January 19 is the picture of the onset of any acute infection, such as scarlet fever, pneumonia or influenza.

The stiff neck brings to mind the possibility of meningitis. I always think first of cerebrospinal meningitis because something can be done about it. I then think of tuberculous meningitis and septic meningitis. It might perfectly well be the meningitic type of poliomyelitis. What else comes into your mind?

A Student: The possibility of encephalitis.

Dr. Smith: Yes; and there is one other thing we always have to think of,—that is meningismus associated with acute infection. It can simulate meningitis fairly well. But we usually do not get a positive Kernig in meningismus. One thing more I always remember because I have been deceived twice. I have seen two cases and have felt perfectly certain they were meningitis,—they had headache, stiff neck and fever,—until I got the spinal fluid. That is subarachnoid hemorrhage. But meningitis is the thing we think of first.

What conclusion do you draw from the breath sounds?

A Student: Pneumonia.

Dr. Smith: I never pay any attention to an examination that is as vague as that. They "approached bronchovesicular." With nothing else that means merely that the examiner wanted to miss nothing and did a very careful lung examination. It does not mean anything to me.

"The fundus appeared dull." Of course you can get optic neuritis and papillitis in meningitis. I do not know whether "dull" means beginning choking or not.

The double vision presumably means involvement of some nerve at the base.

A Student: The sixth nerve.

Dr. Smith: Yes; but why not the third? Why not the fourth? I do not know why the third, the fourth, or the sixth nerve could not be the cause of double vision in some direction or other.

Does the absence of knee and ankle jerks mean anything in meningitis, assuming that this is meningitis? I do not think it means a thing. Tendon reflexes in meningitis are extremely variable. Unless the patient is in deep stupor or coma inequality of the knee jerks is a pretty frequent finding. But tendon reflexes do not mean much in meningitis.

We should like a blood examination. We should like to have the white count. I always group cerebrospinal meningitis and pneumonia together, as they carry about the same kind of white count, and usually a very high one.

An initial pressure of 650 for spinal fluid is very high. I do not know exactly where the line comes, but with the patient perfectly relaxed I should say that anything over 250 is suspicious and anything over 300 is a pretty sure sign of increased intracranial pressure. The total protein is high. Normally it is from 20 to 40. It is reported at 133. Does that colloidal gold test mean anything to you?

A Student: Acute infection.

Dr. Smith: There are a few things that I try to remember about colloidal gold. No color change above 2 is indeterminate. So we have first the indeterminate phase; then we have zone one, in which the high numbers are all to the left; then zone two, in which the high numbers are towards the middle; then zone three, sometimes called the meningitic zone, with the high numbers towards the right. It is a paretic curve when the high numbers are towards the left, a so-called luetic curve when the high numbers are in the middle; and when they are on the right, as in this case, acute infection. I do not know whether that is absolutely correct or not, but that is the way I try to remember the thing. If this is acute meningitis the chlorides ought to be low. What is the average for chlorides?

A Student: 700 to 800.

Dr. Smith: This is definitely low. The sugar is too low to read. That again speaks for septic or acute meningitis. When do you get high sugar?

A Student: In encephalitis.

Dr. Smith: Yes; and in tuberculous meningitis and septic meningitis it goes lower and lower and you may not get any.

"Gram-negative intracellular cocci." I do not see what that could be other than meningococcus.

Do you suppose the patient died suddenly as a result of any anaphylactic reaction from serum? There is certainly no evidence here to suggest it. Meningitis cases are entitled to die suddenly. Will anybody make any other diagnosis than meningococcus meningitis? I do not see how one could.

BACTERIOLOGIC REPORT

Culture from the spinal fluid showed meningococcus.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Meningococcus meningitis.
Pharyngitis.
Chronic tonsillitis.

DR. WILLIAM D. SMITH'S DIAGNOSIS

Meningococcus meningitis.

ANATOMIC DIAGNOSIS

Meningococcus meningitis.

Pathologic Discussion

BY TRACY B. MALLORY, M.D.

There is really nothing to add on this case. The bacteriology of course is proof of the whole thing. There was a meningococcus meningitis, apparently a quite early one so far as the pathologic process is concerned. The exudate was relatively slight in extent and not the heavy thick green exudate you get in the later stages. There were none of the fibrinous adhesions to block circulation of the cerebrospinal fluid that we get in the later stages. The examination did not extend beyond the central nervous system, so we do not know whether the signs in the lungs meant anything. The meningococcus may produce a bronchopneumonia occasionally.

Dr. Smith: Was there any reason for the sudden unexpected death?

Dr. Mallory: No.

A Student: Was the exudate at the base?

Dr. Mallory: It was more slightly marked on the base than over the convexities, but was pretty evenly distributed.

ORDERS

January 21. Liquid diet. Fluids hourly in day. Precautions for meningococcus meningitis. Pantopon one-third grain every three hours p.r.n. Fluids by gavage every hour.

NOTES ON TREATMENT

BY DR. SMITH

We see that this patient was put on a liquid diet. Provision was made for ample fluid intake, if necessary by stomach tube. She had p.r.n. order for pantopon, presumably for the relief of headache or general discomfort. This pretty well covers the symptomatic treatment of the condition.

The specific serum was given promptly, and considering the amount of spinal fluid withdrawn 30 cubic centimeters would be a reasonable amount. The second attempt to give serum intraspinally was discontinued owing to the fact that it seemed to meet with unusual resistance.

Although the record notes that the needle inserted for intravenous injection was not felt, we are not told whether they gave her serum intravenously or not. The question as to the advisability of intravenous treatment always arises and is not always easy to decide. We know that the bacteremia in epidemic cerebrospinal meningitis is early and apt to be transient. Therefore in late cases intravenous treatment is usually considered unnecessary. In severe early cases, and especially those showing a skin rash or arthritis, intravenous therapy is indicated after proper tests for sensitization. It is unlikely however that at the time this patient came to the hospital any sort of treatment, intravenous or even injections into the cisterna magna, would have been efficacious.

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BLOOD CHOLESTEROL OF DIABETIC CHILDREN

NEW and valuable contributions to medical science are constantly emanating from the clinic of Dr. Elliott P. Joslin, and nowhere can one be found who has devoted himself more untiringly to any field of work, than has Dr. Joslin to the study of diabetes. It was he, who, recognizing the atheromatous changes which are found in diabetic patients, particularly since the lives of diabetics have been so prolonged, sounded a warning regarding the use of the high fat diet, and in his clinic the high fat diet is less in evidence than it is elsewhere.

Much of the recent work of this clinic has accordingly had to do with the fat metabolism of diabetics, and the paper appearing in this issue of the *Journal* on cholesterol of the blood of diabetic children, by White and Hunt, is a notable example of the labor which is being spent on this subject.

There is as yet no conclusive evidence that a high blood cholesterol, i.e., over 230 mgs. per 100 cc. of blood is a direct precursor or a determining factor in the development of atheromata, but it is of considerable importance to note that the average cholesterol of the children who have gained tolerance after at least 3 years' duration of the disease is 202 mgs.; moreover, when acidosis reaches the stage of diabetic coma the increase in cholesterol is universal. It is interesting and amazing to realize, in view of our experiences with diabetic children in the pre-insulin era, that the only death in a series of 110 children over a period of four years occurred as a result of untreated diabetic coma.

The authors do not claim that they can say whether the prognosis of complication or life depends upon the height of the cholesterol in the blood, preferring to consider this data as new links in the chain of evidence rather than as ultimate conclusions; in any event this work is so provocative of thought that further papers in the series will be awaited with great interest.

OVERZEALOUS OÖPHORECTOMY

THE normal cycle of changes in the ripening of the ovarian follicles and the development of the corpora lutea are so little understood by some surgeons and the appearance of these follicles is so frequently at variance with the assumed normal that all too often it is a fortunate ovary that weathers a laparotomy. Somehow a cyst looks much larger within the abdominal cavity than it does outside. Only those surgeons who well remember their embryology realize that the ripened follicles may reach a diameter of a centimeter, or even slightly more. Part of the fault lies with the pathologist who sometimes has returned reports of "follicular cyst" on those follicles distended to such a size.

Then too, the corpus hemorrhagicum or corpus luteum with its diameter up to two centimeters and its dark red or brilliant yellow color are objects of striking prominence. Even more startling is the corpus luteum verum of pregnancy. However, we should recognize that these cysts up to a centimeter or slightly over in diameter and the malevolently colored corpora are normal and inevitable occurrences during the period of sexual activity and that by removing one ovary for such assumed pathological conditions we may do the patient harm and by removing both, irreparable damage. Aside from the relative operative mortality, the surgeon who removes both ovaries has performed as serious an operation as though he had done a panhysterectomy. It would be a poorly trained man who would do a panhysterectomy for small cysts of the ovary or for the presence of corpora lutea, yet there are all too many who, perhaps because of the technical ease of the operation, do not stop to think of the serious consequences of oöphorectomy to their patients.

If the courses in embryology in medical schools do nothing more than impress upon the students the normal cycle of changes in the functioning ovary they would be performing an excellent and apparently needed service.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

WHITE, PRISCILLA. M.D. Tufts College Medical School 1923. Associate Staff, New England Deaconess Hospital. Address: 81 Bay State Road, Boston. Associated with her is:

HUNT, HAZEL. A.B. Vassar 1918. Director of the Chemical Laboratory at the New England Deaconess Hospital. Address: New England Deaconess Hospital, Boston. Their subject is: "Cholesterol of the Blood of Diabetic Children". Page 607.

BREED, WILLIAM B. A.B., M.D. Harvard 1920. Associate Physician, Massachusetts General Hospital. Visiting Physician, House of the Good Samaritan. His subject is: "A Rectal Temperature Recording Apparatus". Page 616. Address: 264 Beacon Street, Boston.

CUTLER, ELLIOTT C. A.B., D.S.M., M.D. Harvard 1913. F.A.C.S. Professor of Surgery, Western Reserve University School of Medicine. Director of Surgery, Lakeside Hospital, Cleveland. His subject is: "The Academic Career in Surgery". Page 620. Address: Western Reserve University School of Medicine, Cleveland, Ohio.

FALLON, MICHAEL F. A.B., LL.D., M.D. Harvard 1887. F.A.C.S. Surgeon-in-Chief, St. Vincent Hospital, Worcester, Mass. His subject is: "The Husbandry of the Hospital". Page 626. Address: 390 Main Street, Worcester, Mass.

SAWYER, EDWARD J. M.D. Tufts 1918. Formerly Assistant to Dr. Frederic J. Cotton. His subject is: "Fractures of the Astragalus". Page 629. Address: 488 Centre Street, Newton, Mass.

CHASE, HARRISON A. Ph.B., M.D. Harvard 1905. Visiting Physician, Goddard Hospital, Brockton, Mass. His subject is: "A Suggestion for the Control of Puerperal Sepsis". Page 630. Address: 141 W. Elm Street, Brockton, Mass.

PAINTER, CHARLES F. A.B., M.D. Harvard 1894. His subject is: "Amputation (Lower Leg) Subsequent to Infantile Paralysis". Page 631. Address: 520 Commonwealth Avenue, Boston.

SPERRY, FREDERICK N. M.D. Yale 1894. F.A.C.S. Clinical Professor of Laryngology, Yale University. Chief of Oto-Laryngology Service, New Haven Hospital and New Haven Dispensary. His subject is: "The Common Cold". Page 632. Address: 42 College Street, New Haven, Conn.

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What is the Treatment of Pelvic Inflammation?

The treatment of pelvic inflammation depends upon its etiology. Clinically we divide pelvic inflammation into three large groups. 1—That resulting from gonorrheal infection, 2—That resulting from post-partal or post-abortal infection and 3—That resulting from tuberculous infection.

GONORRHEAL INFECTION

The treatment of gonorrheal infection during the acute stage is conservative and consists of eradicating the local focus and preventing the spread of the disease. Locally the parts should be cleansed with a non-irritating antiseptic; the vagina and cervix should be painted daily with a similar antiseptic; a 5 per cent. solution of mercurochrome, a solution of metaphen 1-500, 20 per cent. argyrol, 2 per cent. silver nitrate are some of the solutions commonly used. The patient is instructed to use a suppository daily. Two satisfactory preparations are suppositories, mercurochrome, 2 per cent. and neo-silvol. The results are checked by repeated smears from the cervix and from the urethra. Ice is applied to the pelvis and the patient is kept in bed until the temperature remains normal for about ten days. When the temperature has become normal, the patient may be allowed to get about. At this stage the use of the glycerin pack becomes useful. Through a bivalve speculum the vagina is filled with pure glycerin and loosely packed with a roller gauze bandage. This is left in for twenty-four hours and upon its removal a long hot douche consisting of an ounce of antiseptic powder of the National Formulary to a gallon of water is given morning and night. The packs are applied two or three times a week. The purpose of this is to deplete the pelvic circulation and to help in the absorption of the exudate. It is advisable to have the patient rest in bed during menstruation since it is at that time that exacerbations occur. If the urethra and bladder are involved large quantities of water are prescribed together with a bland diet. Urinary antiseptics such as hexamethylenamine, Hexylresorcinol and others are given three times daily. Argyrol or protargol suppositories may be applied in the urethra. During the acute stage of the disease operative procedures are employed only for two conditions, namely the drainage of a pelvic abscess through the cul-de-sac of Douglas and the draining of the peritoneal cavity and of the intestine in some cases, when general peritonitis has set in, a very rare complication in gonorrhea. Occasionally an abscess of one vulvo-

vaginal gland and very rarely of both may have to be opened and drained.

Under this plan of treatment a large percentage of gonorrheal cases improve and are apparently and functionally cured. In another group of cases, however, the uterus is held in retroversion by adhesions and by tubo-ovarian masses. There is menorrhagia and metrorrhagia and the patient's health is impaired. When there is no improvement from conservative measures it may be necessary, in the chronic cases, to resort to operation. Since the disease is usually bilateral it is often necessary to sacrifice both tubes when these are badly involved. In young people even if it is not possible to preserve fecundity, it may be possible to maintain menstruation, through the preservation of one ovary.

The operation of Beuttner of Geneva, which consists of removing the tubes, the uterine horns and a wedge of the fundus of the uterus with the saving of one or two ovaries, is well adapted to this class of patients. By proper reconstruction of the parts, all raw areas are covered over with peritoneum and adhesions prevented. It may be necessary to cauterize the cervix in order to cure the endocervicitis which accompanies the disease. In a woman who has reached the menopause or passed it, if operation becomes necessary it is best to remove the uterus and a cone of cervical endometrium together with the infected adnexa.

The treatment of gonorrheal pelvic inflammation, then, is conservative, as long as good results are obtained, and resort to operation only when the conservative has failed. The operation in the young is directed toward conserving menstruation, but in the woman who has passed the menopause radical measures may often be imperative.

POST-PARTAL AND POST-ABORTAL INFECTION

The treatment here is that of puerperal sepsis. Infection may extend along the lymphatics leading from a lacerated cervix along the bases of the broad ligaments, giving rise to a brawny swelling and induration, and to the formation of a broad ligament abscess. Phlebitis of the pelvic veins may accompany the lesion. On the other hand, the infection may ascend along the endometrium to the peritoneum giving rise to a septic peritonitis, which may be fatal since the streptococcus is usually the infecting agent in post-partal and post-abortal inflammations.

Here again the treatment is conservative and supportive. This consists of plenty of fresh air, good hygiene, a well-balanced diet, the use of streptococcus antitoxin, and of foreign proteins such as aolan. Repeated small blood transfusions have been proved to be of great value. Surgical intervention is indicated only to the extent of draining an abscess of the broad ligament which has become well localized, or to drain a pelvic abscess through the cul-de-sac of Douglas or retroperitoneally when it points in the groin or to drain the abdominal cavity and the intestine (enterostomy) in the presence of general peritonitis. It may be necessary to keep the patient in bed for two, even three months before the temperature subsides and before recovery is complete.

Formerly ligation of the pelvic veins and hysterectomy were advised. In the light of our present knowledge these procedures are futile since the type of infection under discussion does not remain localized in the uterus, but soon extends to enter the lymphatic or general circulations.

TUBERCULOUS INFECTION

Pelvic inflammation originating from tuberculosis has decreased considerably with the improvement in the treatment of tuberculosis in general. This type of infection practically always invades the pelvis via the blood stream from a distant focus, such as a pulmonary focus or a tuberculous mesenteric lymph gland. An exception to this is infection of the cervix from the semen of a tuberculous male; this, however, is not frequently encountered.

The treatment of pelvic tuberculosis is that of tuberculosis in general. Hygiene, fresh air, forced feeding, sunlight and rest all play their parts. Not infrequently, a pelvic focus will quiet down as the other tuberculous lesions are healed. Hemorrhage from the uterus may become alarming in some cases. Surgery is indicated when medical measures fail to give relief; this may consist of the ablation of the tubes, the ovaries and the uterus, depending upon the age of the patient and the extent of the lesions.

Questions of a similar nature to the above will be discussed in the *Journal* each week. They may be addressed to the Clerk of the Committee in care of the *Journal* and will be answered by members of the Committee of the Section of Obstetrics and Gynecology.

ARE YOUR ANNUAL DUES FOR 1930 PAID?

According to the vote of the Council if dues are not paid on or before March first the names of delinquent members should be stricken from the mailing list of the *Journal*.

Even if paid later the numbers of the *Journal* issued during the time a given name is off the list cannot be supplied because the number printed is determined by the paid-up membership.

The record is dependent on the reports of the District Treasurers. All members not reported paid must, therefore, be stricken from the list until payment is made.

Aside from the loss of continuity of the issues of the *Journal* another important reason for prompt payment consists in the obligation of members to meet the annual dues.

THE REPORT OF THE DELEGATES TO THE RECENT MEETINGS IN CHICAGO

THE following are a few impressions obtained at the annual Congress on Medical Education, Medical Licensure and Hospitals, held at Chicago, February 17, 18 and 19. The Congress was well represented by delegates from the several states, and Deans Begg, Edsall, Stearns, Dr. Edward A. Knowlton of the Board of Registration in Medicine; Dr. Alonzo G. Howard and Dr. Thomas J. O'Brien were present as delegates from Massachusetts. Dr. Reginald Fitz, as Secretary of the Council for Medical Education, and Dr. Robert L. DeNormandie, as a member of the "White House Child Welfare Committee" were also present.

On February 17, the most important paper was that of Willard C. Rappleye, Director of Study, of the Commission on Medical Education, New Haven, Connecticut. He said that "the annual cost of all forms of medical service is somewhat under $3,000,000,000, approximately 3 per cent. of our national income. The expenditures are roughly divided: Physicians, 25 per cent.; hospitals, 25 per cent.; patent medicines and drugs, 25 per cent.; nurses, dentists and others, 25 per cent. Although the total figure may appear to be a large one, it is not alarming when one considers that America spends more than $10,000,000,000 yearly on automobiles, amusements, jewelry, candy, tobacco, cosmetics, soft drinks and toys."

"Shopping around among specialists is likely to be expensive, and probably has arisen in part because of the incompetent services which many physicians provide for their patients."

This paper made such an impression upon the delegates that a motion was passed that the paper should be printed and sent to editors of certain papers in the different states that the public might be benefited thereby.

Monday afternoon the problem of selecting therapeutic remedies in hospitals was discussed. Much emphasis was placed upon the fact that the United States Pharmacopeia preparations were often ignored and the identical preparations were sold under proprietary names and at greatly increased cost, under prescriptions by physicians. A plea was made for the use of the U. S. P. preparations and those of the National Formulary. Some delegates suggested that the staff coöperate with the pharmacist and the terrific expense now facing hospital authorities for drugs and chemicals could be greatly diminished, by avoiding duplication.

An illustrated lecture, showing various medical schools as photographed from an airplane, was very interesting. The lecturer divided the many schools into those having a campus like Cornell, those confined to a single large building as the Jefferson Medical School, and those whose lecture rooms and hospitals were not closely associated as illustrated by the Harvard Medical School. He also spoke of the endowments and sums appropriated for upkeep of the respective schools. Some of these amounts were enormous.

Some papers stressed the point that most of the medical schools are not teaching general medicine but are teaching specialism. As a result, we have no rudimentary medical instruction and thus do not produce many general practitioners. The lecturer is often a full time man with a hobby and he emphasizes this, forgetting that he is talking to beginners. Too much is left to an internship where the young man is supposed to get all of his practical knowledge. The art of medicine was stressed rather than the practical side. In the discussion there was great opposition to the suggestion of licensing specialists. The consensus of opinion was that this should be handled within the ranks of the medical profession. Dr. Fishbein favored state examinations which would be general. His reason for this seemed to be that the European universities were sending their graduates here and we are unable to judge correctly of their status. He mentioned the fact that many of the Middlesex School graduates were now going to Scotland where they take special courses. One case was cited wherein a man came from one of these schools well recommended and was passed by the National Board before an investigation showed his credentials to be faulty. By successfully passing the National Board, one is able to practice in thirty-five states through reciprocity. The Dean of the American Medical Association of Vienna, who had been approved previously by the Medical School of Edinburgh, was found to have been a graduate of a Class C school. In answering a question, Dr. Fishbein estimated that six hundred graduates of Class C medical schools had gone to Europe and returned to the United States with a degree granting them rights of reciprocity.

The paper on "Verification of Credentials" by Dr. Stanley H. Osborn of the Connecticut State Board of Health was a good description of the care necessary and the difficulties encountered in this work.

While we were attending a conference of the Boards of Registration, a physician came to Dr. Stanley Osborn, the Commissioner of Health of Connecticut, and asked if he could return to that state to practice medicine. This physician showed his card as a member of the American Medical Association and said that he was on the staff of the Chicago Lying-in Hospital. This man was refused permission to practice in Connecticut several years ago as he was a graduate of the Kansas City School of Medicine (now defunct) and was obliged to leave Connecticut as he was not able to qualify before the State Board. Dr. Osborn refused to allow the doctor to return to Connecticut to practice the healing art.

Discussing the Cost of Medical Care, it was

brought out that the big industries not only care for their employees but often demand a portion of the hospital that the families of their employees may be treated by corporation physicians who are working for a salary. Students must be taught financial and commercial principles as well as scientific ones. E. A. Filene of Boston was quoted as having said "while the science of healing is making great strides, the business of healing is lagging woefully behind".

The budget system was stressed for people in the middle class and it was urged that they be taught to prepare for the illnesses which are sure to come to them as well as for the next season's clothing and the vacation which they never overlook.

Part time nursing for patients who cannot pay for the idle moments of a special nurse must be devised. It was thought that a nurse working twelve hours should care for the wants of three or four patients rather than sit down chatting with others or reading a book. The amount demanded by a nurse is so large that more service should be obtained from her and hospital superintendents and matrons were advised to give this some thought. Ninety-three per cent. of our hospital care costs $5 a day or less and the entire cost of medical care of this country is only one-third of what it pays for tobacco. Cosmetics and automobiles also greatly exceed the cost of medical care.

A survey of articles on hospital administration showed that out of fifty such articles only four writers were familiar with the practical side of running a hospital. Economists, social workers and theorists do not hesitate to give their opinions on the subjects of which they know very little practically.

The discussion of the basic science laws in the several states showed that this method of determining a physician's ability was very faulty as the several states do not agree among themselves concerning the organization of boards, preliminary requirements and subjects included in the examinations. The examiners are laymen and are not competent to pass upon the qualifications of medical students. It was brought out that thirty states in the United States, including the District of Columbia, have more than one board of examiners. It was the consensus of opinion that a single board is preferable.

The outstanding paper of the session was by Dr. E. Stanley Ryerson, Secretary of the University of Toronto Faculty of Medicine on Medical Registration in Canada, where the whole question of examination and registration practically rests with the Medical Schools. Dr. Ryerson also brought out in discussion that they had succeeded in securing control of the annual insurance examinations, these examinations to be made by the family physician, for which a fee of six dollars is collected by the Provincial Examining Board, four of which is forwarded to the examining physician, and two is retained by the Board for the extension of medical education in rural communities. All physicians are instructed by the Board in the making of insurance examinations, and the only answer required of the physician on these examinations is a "yes" or "no" to the question as to any serious changes in the subject's health condition during the year. This scheme seemed to meet with the approval of everyone present, and the opinion was expressed that this system would be a body blow to the so-called Life Extension Bureau and farcical examinations as conducted in the United States.

The papers on "Full Time vs. Part Time Teaching in Medical Schools" brought out the following points:

First, that frequently part time teachers did not have the time to give their subjects the necessary preparation and consideration.

Second, that full time teachers were preferable if the school had control of or proper affiliation with suitable hospitals.

Third, that local conditions were deciding factors and neither course was best in all schools.

The papers on "Physical Therapy" were not up to standard. The outstanding paper was one by Dr. J. S. Coulter of Northwestern University who clearly presented the need and probable limitation of this department. In the discussion of this paper it seemed to be the opinion of the physiotherapists present that all forms of therapy, other than the administration of drugs and operative surgery, should be the exclusive privilege of the physiotherapist, this to include the treatment of skin diseases, x-ray treatment, etc. Obviously, much is to be learned and much time will be required to develop this department and keep it in its proper place in relation to the other departments in a school or hospital.

It was the consensus of opinion that this Congress was the best attended, and most important that we have had. A broad vision into the future dominated the construction and equipment of the new buildings of the medical schools. Constructive criticism of the curricula stressed the importance of educating the student as a general practitioner, leaving the interneship and the research laboratory for the development of such men as qualify for special training.

The growing tendency toward Federal, State or Capitalistic control of hospitals and the practice of medicine, can best be offset by the importance of the quality, unity and organization of our schools, our boards of registration and our societies.

ALONZO G. HOWARD.
THOMAS J. O'BRIEN.

A MEMORIAL TRIBUTE TO DR. W. L. McCLURE

THE sudden death of William Lionel McClure leaves an empty space that can never be filled. He has been taken from us just as he was well on his way toward the greatest things in our profession. Clean-cut, in feature as in thought, an indefatigable worker who, at the end of long and tiring day, knew how to laugh, perhaps at himself; sound in judgment, always thoughtful of others, always willing to do more than his share, generous to a fault, decisive, skilful, brilliant; surely had he been spared he would have reached the very highest peak of his profession.

This world is a better place for his having been in it. I consider myself lucky to have known him as a friend.

March 14, 1930. WYMAN RICHARDSON.

THE MEDICAL LIBRARY AND MASSACHUSETTS MEDICAL SOCIETY FUND

OF course you know that contributions to the Fund may be deducted from your taxable income.

MISCELLANY

THE HOUSEHOLD NURSING ASSOCIATION

The annual report of this organization shows that during 1929 its income was $34,171.31 of which sum $17,575.80 was derived from earnings, the balance being made up of donations, income from permanent fund, housing pupils and proceeds from Directors' activities. The percentage of earnings to the income has increased from 54.2 in 1926 to 79.8 in 1929.

Pupils are sent to affiliating hospitals as follows: Emerson Hospital, Concord; Fairlawn Hospital, Worcester; Home Memorial Hospital, New London, Connecticut; Marlborough Hospital, Marlboro, Mass.; Mary Lane Hospital, Ware, Mass.; Moore Hospital, Brockton; Norwood Hospital, Norwood; Whitinsville Hospital, Whitinsville; and Winthrop Community Hospital, Winthrop.

There are 370 nurses on the registry who were assigned to 2682 cases in 1929.

After preliminary household training the pupils are sent to the affiliating hospitals for ten and a half months returning for six months' work on private cases.

This organization has for its advisory committee the following named doctors: Francis J. Callanan, William E. Ladd, Robert B. Osgood, John B. Swift and W. T. Sherman Thorndike.

Motto of the organization seems to be "For the care of sickness in the home, for the care of the home during sickness".

THE WASHINGTONIAN HOME NEEDS FUNDS

In the annual report of the Washingtonian Home, 41 Waltham Street, Boston, an institution which provides a retreat for inebriates and a means of reforming them, Congressman George Holden Tinkham, President, announced that during the past year there were 745 admissions to the Home. As the Home was closed during the last week in July and the month of August the figures correspond on an average with the 855 cases during 1928.

However the figures for the last year are low compared with preceding years, 1923 through 1927 having admissions of over 1200 cases each year.

Dr. Hugh Barr Gray, superintendent, believes that this is not due so much to the enforcement of prohibition as to the increase from the Home's charge of $10 per week to $20, that it has been necessary for the Home to maintain.

At present the Washingtonian Home, which was founded in 1857, is making an appeal for $150,000 with which to purchase a new building as the Directors feel the work cannot be successfully continued in the noisy, congested district that has grown up about the present establishment.

This is the first time in 55 years that the Directors of the Washingtonian Home have made an appeal for funds. However it is felt that the appeal is a worthy one for the Home has given aid to more than 40,000 persons since its establishment.

DELTA OMEGA

Lectures under the auspices of local chapters of Delta Omega, the honorary public health society, were given in March at the Massachusetts Institute of Technology and the Yale School of Medicine. At the third annual Delta Omega lecture at the Massachusetts Institute on March 4, 1930, C. C. Young, Ph.D., Dr. P. H. of the Michigan State Department of Health, national president of the society, spoke on "The Trend in the Development of Public Health Laboratories". The speaker at the second annual Delta Omega lecture at the Yale School of Medicine on March 14, 1930, was George H. Bigelow, M.D., Dr. P. H., State Commissioner of Public Health of Massachusetts, who discussed the official program for cancer control in his state.

WEEKLY HEALTH INDEX

Telegraphic returns from 65 cities with a total population of thirty million for the week ending March 15, indicate a mortality rate of 13.8 as against a rate of 14.7 for the corresponding week of last year. The highest rate (27.1) appears for Memphis, Tenn., and the lowest (8.6) for Fort Worth, Tex., and Yonkers, N. Y. The highest infant mortality rate (170) appears for Utica, N. Y., and the lowest for Salt Lake City, Utah, and Trenton, N. J., which reported no infant mortality.

The annual rate for 65 cities is 13.9 for the eleven weeks of 1930, as against a rate of 16.7 for the corresponding weeks of 1929.

EXCERPTS FROM THE BULLETIN OF THE CHILDREN'S BUREAU

FATAL AUTOMOBILE ACCIDENTS TO CHILDREN

Thirty-five to forty per cent. of the deaths due to the use of automobiles in 1929 occurring among the

COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT
WITH 1928 AND SEVEN YEAR AVERAGE
MONTH ENDING MARCH 8, 1930

DISEASES	1930					1929			
	Wk. ending Feb. 15	Wk. ending Feb. 22	Wk. ending Mar. 1	Wk. ending Mar. 8	Average cases reported for week corresponding to March 8 for past seven years	Wk. ending Feb. 16	Wk. ending Feb. 23	Wk. ending Mar. 2	Wk. ending Mar. 9
Cerebrospinal Men.	-	2	3	-	1	2	1	2	5
Chickenpox	161	139	152	125	73	98	58	80	85
Conjunctivitis Inf.	3	-	-	2	1		-	-	-
Diphtheria	25	20	23	22	40	30	16	26	18
Encephalitis Epid.	-	-	-	-	2	-	-	2	1
German Measles	41	46	49	36	36	72	96	124	172
Influenza	6	10	10	20	98	373	99	5053	51
Malaria	-	-	-	1	-	-	-	-	-
Measles	20	13	23	39	391	328	375	381	484
Mumps	46	44	45	54	131	91	109	53	110
Pneumonia (Broncho)*	39	52	67	60	54	73	42	54	40
Pneumonia (Lobar)	65	69	74	81	61	69	59	70	55
Poliomyelitis	1	-	-	-	-	-	-	-	-
Scarlet Fever	127	131	124	163	108	65	56	48	55
Septic Sore Throat	-	1	1	4	2	-	1	1	2
Smallpox	-	-	-	-	2	-	2	-	-
Tetanus	-	-	-	-	-	-	-	1	-
Tuberculosis (Pul.)	19	21	27	28	34	26	19	30	31
Tuberculosis (O.F.)	4	1	5	1	3	3	2	3	1
Typhoid Fever	1	1	-	-	1	-	-	-	2
Undulant Fever**	-	-	-	-	-	-	-	-	1
Whooping Cough	54	43	67	44	71	18	29	15	30
Gonorrhea	18	18	48	34	18	14	33	46	32
Syphilis	23	28	71	56	33	28	31	46	76

* Made reportable January 1, 1925.
** Made reportable July 1, 1928.

REMARKS: No cases of Asiatic cholera, Glanders, plague, rabies in humans and Yellow fever during the past seven years.

industrial policyholders of the Metropolitan Life Insurance Company were of children under 15 years of age. This company reported that 21 out of every 100,000 of its clients had been killed through this cause, a rate nearly one-eighth greater than for 1928. It estimates that there were more than 31,400 automobile fatalities in the general population of Continental United States and that approximately 1,000,000 persons were injured.

BOSTON MENTAL HYGIENE SURVEY

With the aid of an appropriation from the Commonwealth Fund a survey of the mental-hygiene activities of Boston has been undertaken by the Massachusetts Society for Mental Hygiene. The society will have the coöperation of the Boston Council of Social Agencies, the Boston Health League, and the Massachusetts Department of Mental Diseases. The survey will be under the direction of Dr. George H. Preston, Commissioner of Mental Hygiene of Maryland.

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS, JANUARY, 1930

GENERAL PREVALENCE

The total number of cases of communicable diseases reported was distinctly lower than the number reported for January, 1929, due to the absence of "influenza".

The epidemic index was high for whooping cough, diphtheria, and typhoid fever, the first of these setting a new high level for the month. The incidence of epidemic cerebrospinal meningitis, chickenpox, and mumps was likewise high.

The reported incidence of measles was low, although markedly increased over that of December.

The incidence of anterior poliomyelitis and influenza was distinctly low.

Scarlet fever, lobar pneumonia and pulmonary tuberculosis were reported with "normal" frequency.

Pellagra was reported from Boston, 2; total, 2.

Septic Sore Throat was reported from Adams, 3; Boston, 19; Cambridge, 3; Haverhill, 2; Holyoke, 2; Leominster, 1; Malden, 1; Medford, 1; Northampton, 2; Quincy, 2; Randolph, 2; Revere, 1; Saugus, 1; Somerville, 1; Westfield, 1; Worcester, 3; total, 45.

Trachoma was reported from Boston, 2; Rockland, 1; Springfield, 1; Watertown, 1; total, 5.

Trichinosis was reported from Boston, 1; total, 1.

Undulant fever was reported from Colrain, 2; Marlboro, 1; total, 3.

MONTHLY REPORT OF CERTAIN COMMUNICABLE DISEASES.

	Cases in Entire Population				Case Rates per 100,000 Pop.		
	Jan. 1930	Jan. 1929	Prosodemic Index	Epidemic Index	Jan. 1930	Jan. 1929	Expected Rate***
ALL CAUSES	10412	18078	-	-	234.7	412.7	-
Ant. Poliomyelitis	4	4	13*	.3**	.1	.1	.3
Diphtheria	563	490	445*	1.3**	12.7	11.2	10.0
Ep. C. S. Meningitis	20	10	8*	2.5**	.5	.2	.2
Measles	1153	2701	3085*	.4**	26.0	61.7	69.5
Pneumonia, Lobar	489	1342	657*	.7**	11.0	30.6	14.8
Scarlet Fever	1497	1232	1494*	1.0**	33.7	28.1	33.7
Tuberculosis, Pul.	440	381	399*	1.1**	9.9	8.7	9.0
Typhoid Fever	24	8	16*	1.5**	.5	.2	.4
Whooping Cough	1710	653	861*	2.0**	38.5	14.9	19.4
Chicken Pox	1697	1696	-	-	38.3	38.7	-
German Measles	85	42	-	-	1.9	1.0	-
Gonorrhea	588	396	-	-	13.3	9.0	-
Influenza	49	7995	-	-	1.1	182.5	-
Mumps	1005	461	-	-	22.7	10.5	-
Syphilis	390	135	-	-	8.8	3.0	-
Tuberculosis, O.F.	60	43	-	-	1.4	1.0	-

* This Index is an attempt to estimate the number of cases based on the trend during the past years which can be expected to occur, and is for the purpose of comparison with the number of cases which actually did occur.

** This ratio expresses how prevalent the disease is compared with the index mentioned above; 1.0 indicates that the actual number of cases equals the expected number. A larger number means a greater prevalence, and a smaller number a lesser prevalence than expected. Thus, 2.0 would indicate twice the expected number of cases, and .5 half the expected number of cases. The method used to determine the indices is described in the August 18, 1927 issue of the Boston Medical and Surgical Journal.

*** Calculated from the Prosodemic Index.

The average incidence of non-pulmonary tuberculosis and German measles was also normal.

Coincident with the change in the system of reporting gonorrhea and syphilis and the present reporting of the diseases in all forms, the reported incidence of both diseases was markedly increased.

RARE DISEASES

Anterior Poliomyelitis was reported from Haverhill, 1; Middleboro, 1; Wellesley, 2; total, 4.

Encephalitis Lethargica was reported from Danvers, 1; Holden, 1; Lynn, 2; Marblehead, 1; Marlboro, 1; Worcester, 2; total, 8.

Epidemic cerebrospinal meningitis was reported from Boston, 4; Cambridge, 3; Chicopee, 1; Lawrence, 2; Leominster, 1; Lexington, 2; Ludlow, 1; Lynn, 1; Peabody, 1; Somerville, 1; Uxbridge, 1; Westfield, 1; Worcester, 1; total, 20.

Malaria was reported from Chelsea, 1; total, 1.

COST OF MEMBERSHIP IN A STATE MEDICAL SOCIETY

A note to Dr. A. K. Stone, Treasurer of the Massachusetts Medical Society, from a doctor who has moved to the West contains the information that it costs one hundred and twenty-one dollars to join the state and county societies of California.

A fellow pays only eight dollars for the same privilege in Massachusetts. This is an argument in favor of generous support of our Society and the Library.

Figure out how much has been saved during the time a fellow has been a member of the Massachusetts Medical Society as compared with the California doctor. This may be an appeal for generous support of the Society and its coördinating body, the Boston Medical Library. An average contribution of one hundred dollars by each member of the Society now will bring the fund almost to the objective.

CORRESPONDENCE

AN APPRECIATION OF THE CHILDREN'S HOSPITAL WITH SUGGESTIONS TO OTHER INSTITUTIONS

The *New England Journal of Medicine.*

Dear Editor:

Allow me to express my congratulations to the Children's Hospital of Boston for its sincere and scientific work for the sake of its patients; also for its worthy professional relationship with the physician.

Here is one hospital in this city that really considers that the physician, though not connected with its staff, may be interested in diagnosis and progress of the case recommended to the hospital.

Most of the hospitals in Boston, when a case is referred by a physician, fail to report to the medical man recommending the case, the diagnosis, laboratory findings and progress.

To report or give any information about a *mere patient* to a *mere physician* is really too much to be expected.

Apparently the psychology of the average hospital is that the physician does not care to know anything about the patient that goes to a free hospital.

There are many physicians who are interested in their patients even after they arrive in public institutions.

I do realize that the year 1930 is rather too early to expect the hospitals to open their doors to every *well-meaning, honest, registered and reputable physician.*

WHEN BOSTON WILL BECOME CIVILIZED, this, most likely will be in order. However, at the present date under strict closed staff-hospitals I plead for consideration for the sake of the *patients, hospitals* and *physicians.*

I propose that every up-to-date hospital of this city follow the example set by the Children's Hospital.

Superintendents of the other hospitals of Boston, please take notice. Your hospitals have their doors shut to most of the practicing physicians in this city who would be more than glad to attend your clinics and increase their medical and surgical knowledge. This is the rule of a closed staff hospital laid down by *bankers, lawyers* and *business men* who form most of the trustees of your hospitals.

At least for the present until Boston will become civilized, give a complete report to the physician recommending the patient after he or she is discharged from your hospital just like the one the Children's Hospital gave me on one of my referred cases.*

This may cause an expense of a few hundred dollars a year. However it will create a better understanding between the physician and the hospital. It will also create an incentive for the average physician to do better work as well as for the hospital or interne or House Resident to work up every medical or surgical case to the very tip of his finger.

This is no criticism but a suggestion. I do not wish to insult or criticise any hospital. If there is any hospital that takes this letter as an insult I wish to say that that particular hospital was meant for this attack.

Children's Hospital! I have great respect for your institution. Let us hope that the other hospitals that deserve the name hospital will follow your good work.

"Let the children lead the blind."

With kind greetings for Scientific Medicine.

WILLIAM FRANKMAN, M.D.

1325 Commonwealth Avenue, Boston.

*Lack of space prevents publication of detailed report from Children's Hospital.

A REFERENCE TO ALCOHOLIC BEVERAGES AND ANAESTHESIA

To the Editor of the *New England Journal of Medicine.*

Sir:

I desire to call the attention of those "wets" who want the manufacture of beer and light wines made legal, but who apparently raise their hands in horror at mention of distilled liquors, to the following passage from the Old Testament:

> And thou shalt bestow that money for whatsoever thy soul lusteth after, for oxen, or for sheep, or for wine, or for strong drink, or for whatsoever thy soul desireth (Deut. 14:26).

In this passage the Hebrew word for wine (yayin) is contrasted with the Hebrew word for "strong drink" (shechar), and the people of Israel were permitted to drink both wine and "strong drink".

I am convinced that the "strong drink" referred to in this passage was a distilled liquor. If it had been merely a strong kind of wine, it hardly would have been sharply contrasted with wine.

It is generally supposed that distilled liquors were unknown to the ancients. But such a supposition cannot be proved. It is also supposed that anaesthesia is a modern discovery. But I once came across a passage in the "De Trinitate" of Hilary of Poitiers, a writer of the fourth century, A.D., that shows unmistakably that the ancients were acquainted with anaesthesia. The passage is as follows:

> Also when through some grave necessity, part of the body must be cut away, the soul can be lulled to sleep by drugs, which overcome the pain and produce in the mind a death-like forgetfulness of its power of sense. Then limbs can be cut off without pain: the flesh is dead to all feeling, and does not heed the deep thrust of the knife, because the soul within it is asleep.
>
> De Trinitate, Book X, ¶ 14.

Since anaesthesia was known to the ancients, as I have just shown, it is likely enough that the distillation of liquors was also known to them; and the passage from the Old Testament that I have quoted above goes far to confirm this supposition.

Yours very truly,

CHARLES HOOPER.

Coeur d'Alene, Idaho,
March 11, 1930.

RECENT DEATH

KNIGHT—DR. MARCUS WHITNEY KNIGHT of Milford, a Fellow of the Massachusetts Medical Society, died at the New England Baptist Hospital, Roxbury,

February 1, 1930, following an operation for mastoiditis, aged 68.

Dr. Knight was a graduate of the University of Vermont College of Medicine in 1882 and joined the State Medical Society in 1896.

NEWS ITEMS

MEMBERS OF THE JOHNS HOPKINS MEDICAL DEPARTMENT HAVE BEEN INVITED TO ASSIST IN THE CANCER STUDY AT THE SOUTHERN PACIFIC RAILROAD HOSPITAL—Drs. Coffey and Humber have invited Dr. Joseph C. Bloodgood, Dr. Charles F. Geshickter, senior Garvan cancer research student and Edward P. Walker, technician of the surgical-pathological laboratory of the university to take part in a national study of cancer at the Southern Pacific Railroad Hospital in San Francisco.

If these eminent investigators join with Coffey and Humber, it is reasonable to expect that the foundation already laid can be built upon to develop important additions to the demonstrations thus far made.

Others including Dr. George H. Bigelow and Dr. Robert B. Greenough of Massachusetts have been invited.

ASSIGNMENTS OF MEMBERS OF THE U. S. PUBLIC HEALTH SERVICE TO ATTEND THE NEW ENGLAND HEALTH INSTITUTE, APRIL 14-18, 1930—Assistant Surgeon General R. C. Williams, Surgeon J. P. Leake, and Sr. Surgeon L. L. Lumsden, all of Washington, D. C., and Sanitary Engineer L. M. Fisher of New York.

REPORTS AND NOTICES OF MEETINGS

THE HARVARD MEDICAL SOCIETY

The Harvard Medical Society held a regular meeting at the Peter Bent Brigham Hospital Amphitheatre on March 11, 1930 at 8:15 o'clock.

Dr. Harvey Cushing conducted a neurological clinic in which he discussed various types of brain tumors, illustrating each one by a case. The first case was a postoperative third ventricle tumor, the first, as far as Dr. Cushing knows, of such an operation. The next two cases were frontal fossa meningiomas. The next three cases,—astrocytoma, ependymoma, and temporal cyst,—illustrated solid tumors which had become cystic. The prognosis in a case of oligodendroglioma, of which an example was shown, is good, said Dr. Cushing, provided it is in a favorable location. Cerebellar tumors were illustrated by two cases. The last case was one of a cystic angioma. English investigators have shown that such cases were only manifestations of a general angiomatous condition of the central nervous system, and that many of the patients had Hippal's disease of the eye. On the basis of this report, any of the old patients at the Peter Bent Brigham Hospital who have showed similar signs are being recalled for investigation.

At the conclusion of the clinic, Dr. Reginald Fitz told about the life of John Warren, first of the distinguished line of the Warren family. John Warren was born in 1753 in Roxbury and spent his youth there. At ten years of age he learned to read and was able to enter Harvard College at the age of 14. After graduating he apprenticed himself to his brother Joseph, who was practicing medicine in Roxbury. After two years of such training he set up a practice for himself in Salem where he was elected to the office of surgeon to Colonel Pickering's regiment of militia. He marched to Lexington on the memorable April day and returned unharmed. His brother, Joseph, was killed in the Battle of Bunker Hill two months later.

As time went on, John was attached to Washington's Staff and later became surgeon-in-chief of a base hospital in Boston. During the war period he met and married Miss Abigail Collins, daughter of the governor of Rhode Island.

He became a great friend and correspondent of Dr. John Morgan, an eminent medical man of that day, and one who published the first American book on medical education. During the war John Warren gave a very popular course in Anatomy and Surgery in the War Hospital near the present site of the Massachusetts General Hospital. Finally, President Willard of Harvard University asked Dr. Warren to prepare plans for a Harvard Medical School. This was done and in 1782 the first course was given.

In addition to these activities Dr. Warren was always the head of all forward and important enterprises. He urged and forwarded inoculation in the smallpox epidemic in 1790, and later in the yellow fever epidemic he autopsied at least three fatal cases, described his findings, and outlined the care of other cases. Socially he was very happy. He had an immense practice, worked very hard, and lived a full life.

In 1812 in Volume I, Page 1, of the present *New England Journal of Medicine* he wrote on Angina Pectoris, and three years later died of this malady.

HARVARD MEDICAL SCHOOL NEWS

At a meeting in Boston, March 10, 1930, the President and Fellows of Harvard College voted on recommendation of the Administrative Board of the Medical School, to award the following scholarships for 1929-'30:

David Williams Cheever Scholarship—William G. Thompson, 1M.

Charlotte Green—Seiriol L. Williams, 1M.

George Haven—Jared Y. Garber, 1M; Ralph L. Hawkins, 1M; Prentiss L. Hyder, 1M; Robert R. Kelley, 1M; Rolf Lium, 1M; Kenneth B. Olson, 1M; Aaron Prigot, 1M; William F. Queen, 1M; Arnold F. E. Settlage, 1M; Carlton R. Souders, 1M; Robert O. Wilson, 1M; John W. Zeller, 1M.

They also voted to make the following appointments and changes in titles:

From January 1 to September 1, 1930:

Franc Douglas Ingraham, Assistant in Surgery.

Sumner Mead Roberts, Instructor in Orthopaedic Surgery.

Henry Hardwick Faxon, Assistant in Surgery.

John Sprague Hodgson, Assistant in Surgery.

William Lionel McClure,* Assistant in Surgery.

*Deceased.

Reginald Hammerick Smithwick, Assistant in Surgery.

From February 1 to September 1, 1930:

Lewis Henry Koplik, Instructor in Pathology.

Edward Benson Benedict, Assistant in Surgery.

Maximiliano Ruiz Castaneda, Research Fellow in Bacteriology.

James Clarke White, Instructor in Surgery (Promoted from Assistant in Surgery).

From March 1 to September 1, 1930:

Elizabeth Evans Lord, Research Associate in Pediatrics.

Solomon Hyman Rubin, Instructor in Pediatrics.

From April 1 to September 1, 1930:

James McCrea Bethea, Charles Follen Folsom Teaching Fellow in Hygiene.

Richard Meagher, Arthur Tracy Cabot Fellow in Surgery.

For one year from July 1, 1930:

Lyman Bradford Smith, Research Fellow in Botany.

For one year from September 1, 1930 Collis P. Huntington Memorial Hospital:

James Fleece Rinehart, Littauer Research Fellow.

Douglas Goldman, Littauer Research Fellow.

William Thomas Salter, Research Fellow in Biological Chemistry.

George Payling Wright, Research Fellow in Physical Chemistry.

William Duane, Research Fellow in Physics.

Egon Lorenz, Research Fellow in Bio-Physics.

John Willis Meachen, Roentgenologist.

Lawrie Byron Morrison, Consulting Roentgenologist.

Merrill Clary Sosman, Consulting Roentgenologist.

Francis Tennery Hunter, Assistant Physician.

Douglas Richard Drury, Associate Physician.

Henry Jackson, Jr., Assistant Physician.

Ovid Otto Meyer, Assistant Physician.

Shields Warren, Pathologist.

Simeon Burt Wolbach, Consulting Pathologist.

Ernest Merrill Daland, Surgeon.

George Adams Leland, Jr., Surgeon.

George Gilbert Smith, Surgeon.

Edwin Parker Hayden, Surgeon to Out-Patients.

Charles Carroll Lund, Surgeon to Out-Patients.

William Martindale Shedden, Surgeon to Out-Patients.

Fletcher Hatch Colby, Assistant Surgeon.

Arthur Moses Greenwood, Dermatologist.

Edwards Woodbridge Herman, Laryngologist.

Carl Helge Ernlund, Assistant Laryngologist.

Varaztad Hovhaness Kazanjian, Assistant Laryngologist.

Joseph Briggs Howland, Administrator.

Joe Vincent Meigs, Surgeon to Out-Patients.

Grantley Walder Taylor, Surgeon to Out-Patients.

Yellapragada Subba Row, from Research Fellow in Biological Chemistry, to Austin Teaching Fellow in Biological Chemistry, from February 1, 1930, to September 1, 1930.

BOSTON HEALTH LEAGUE

A public meeting will be held Monday, March 31, 1930, at 3:30 P. M., 20th Century Club, 3 Joy Street, Boston.

Dr. Haven Emerson will discuss the situation with regard to Tuberculosis and Chronic Disease in Boston in the light of the recommendation in his studies, made in 1926 and 1929.

A DEMONSTRATION CLINIC AT THE REGULAR SESSION OF THE LAWRENCE CANCER CLINIC

There will be another Demonstration Clinic upon the occasion of the regular session of the Lawrence Cancer Clinic, on Tuesday, April 1, 1930, at 10 A. M. at Lawrence General Hospital, 1 Garden Street, Lawrence, with a consultant from Boston, in attendance. The profession is invited to the Clinic and to bring or send such cases as the physicians may desire to have the benefit of this service.

J. Forrest Burnham, M.D., *Chairman.*
567 Haverhill Street, Lawrence, Mass.

THE CUTTER LECTURES ON PREVENTIVE MEDICINE

By William Mansfield Clark, Ph.D., Professor of Biological Chemistry, the Johns Hopkins Medical School, Baltimore, Maryland.

Subjects as follows:

Reversible Oxidation-Reduction in Organic Systems.

I. Theory and Methods. Tuesday, April 1, 1930.

II. Biological Applications. Wednesday, April 2, 1930.

At the Harvard Medical School, Amphitheatre Building E, 5 P. M.

These lectures are given annually under the terms of a bequest from John Clarence Cutter, whose will provided that the lectures so given should be styled the Cutter Lectures on Preventive Medicine and that they should be delivered in Boston and be free to the medical profession and the press.

The medical profession, medical and public health students, the press and others interested are cordially invited to attend.

THE SECOND MEETING OF THE NEW ENGLAND OBSTETRICAL AND GYNECOLOGICAL SOCIETY

The second meeting of the New England Obstetrical and Gynecological Society is to be held at Providence, R. I., on April 30, 1930. This meeting will begin in the morning and last throughout the day. An attractive program has been arranged by Dr. Edward S. Brackett, who is in charge of the arrangements, the details of which will appear in the next issue of the *Journal.*

It is hoped that all members will note the date and reserve it for a day of relaxation, instruction and entertainment.

GREATER BOSTON MEDICAL SOCIETY

A joint meeting of the Greater Boston Medical Society and the Beth Israel Hospital will be held on Tuesday, April 1, 1930, at 8.15, at the Beth Israel Hospital.

Program:

"Diuretics and Their Uses." By Dr. Henry A. Christian.

Discussion from the floor.

LOUIS SILVER, M.D., *Secretary.*

483 Beacon Street, Boston, Mass.

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

1929-1930—Massachusetts Dietetic Association. Complete schedule appears on page 852, issue of October 24, 1929.

March-October — International Medical Postgraduate Courses in Berlin. Complete notice appears on page 853, issue of October 24, 1929.

March 31—Boston Health League. Complete notice appears on page 655.

April 1—Greater Boston Medical Society. Complete notice appears above.

April 1—Lawrence Cancer Clinic. Detailed notice appears on page 655.

April 1-2—Cutter Lectures. Detailed notice appears on page 655.

April 14-18—The New England Public Health Institute. Complete notice appears on page 55, issue of January 2.

April 16-18—Third Physical Therapy Convention. Detailed notice appears on page 603, issue of March 20.

April 30—New England Obstetrical and Gynecological Society. Complete notice appears on page 655.

May 2—Annual Meeting of the American Society of Stomatologists. Detailed notice appears on page 92, issue of January 9.

May 5-10—First International Congress on Mental Hygiene. Detailed notice appears on page 93, issue of January 9.

September 4-8—Fifth International Congress on Physiotherapy. Complete notice appears on page 906, issue of October 31, 1929.

October 27—The American Public Health Association Detailed notice appears on page 1271, issue of December 19, 1929.

DISTRICT MEDICAL SOCIETIES

Essex North District Medical Society

May 1—Thursday—Censors' meeting at Hotel Bartlett, 95 Main Street, Haverhill, (Telephone 3430) at 2 P. M sharp. Candidates should present their diplomas to the Secretary one week in advance.

May 14—Wednesday—Annual Meeting, at Anna Jaques Hospital, Highland Avenue, Newburyport, Mass., at 12 noon. Subject, "Infective Foci: Sense or Nonsence." There will be talks and discussions on the subject from individual points of view, by seven physicians engaged in nine of the specialties of medicine, and from the dental standpoint.

J. FORREST BURNHAM, M.D., Secretary.

Essex South District Medical Society

Wednesday, April 2, 1930—Hotel Hawthorne, Salem Dinner at 7 P. M. Speaker: Dr. Timothy Leary, Boston. Subject: "Diagnostic and Therapeutic Pitfalls in Intracranial Pyogenic Infections."

Thursday, May 1, 1930—Censors meet for Examination of Candidates at Salem Hospital at 3:30 P. M.

Tuesday, May 13, 1930—Annual Meeting. The Tavern, Gloucester. Speaker: Dr. C. Macfie Campbell, Director of Boston Psychopathic Hospital. Subject to be announced later. Ladies invited. Dancing.

R. E. STONE, M.D., Secretary.

Franklin District Medical Society

The next meeting of the Franklin District Medical Society will be held at the Weldon Hotel, Greenfield, Mass., on the second Tuesday of May, at 11 A. M.

CHARLES MOLINE, M.D., Secretary.

Hampshire District Medical Society

April 9—This meeting will occur at 11 A. M. and will be held at the Dickinson Hospital, Northampton.

The Annual Meeting will be held in May.

LUTHER O. WHITMAN, M.D., Secretary.

Middlesex East District Medical Society

May 13—At Unicorn Country Club, Stoneham.

ALLAN R. CUNNINGHAM, M.D., Secretary.

Middlesex South District Medical Society

April 16, 1930—Annual Meeting. Commander Hotel, Cambridge. Program to be announced.

May, 1930—Censors' meeting.

ALEXANDER A. LEVI, M.D., Secretary.

Norfolk District Medical Society

May 1, 1930—The Censors meet for the examination of candidates, in the Roxbury Masonic Temple, 171 Warren Street, Roxbury, at 4:00 P. M.

Applications must be in the hands of the Secretary at least one week previous to date of examination.

May 6, 1930—Annual Meeting. Program to be announced.

Owing to inability to engage the Roxbury Masonic Apartments on the last Tuesday of the month, such meetings as will be held in the Roxbury Temple will be held Monday evenings as per the dates above.

FRANK S. CRUICKSHANK, M.D., Secretary.

Plymouth District Medical Society

April 17, 1930—Annual Meeting, Commercial Club, Brockton, 7 P. M. Election of officers. Annual oration, Dr. Frederick F. Weiner, "The Management of Prostatic Diseases," with moving pictures.

G. A. MOORE, M.D., Secretary.

BOOK REVIEWS

Incompatibility in Prescriptions and How To Avoid It, to which is added *A Dictionary of Incompatibilities*. By THOMAS STEPHENSON. New edition, revised and enlarged. New York: Paul B. Hoeber, Inc., 1929. 61 pages. Price, $1.50.

This small book might be of value to pharmacists, pharmacologists, and those physicians who are accustomed to dispense their own medicines or to write long, complex prescriptions. To the physicians of the modern school, however, who give very simple drugs, it would not be indispensable upon their book-shelves.

The Volume of the Blood and Plasma in Health and Disease. By LEONARD G. ROWNTREE, M.D. and GEORGE E. BROWN, M.D., with the technical assistance of Grace M. Roth. Philadelphia and London: W. B. Saunders Co., 1929. 219 pages. Price, $3.00.

This volume presents in one small monograph practically everything that is known about the volume of the blood and plasma at the present time. The authors have done an enormous amount of work, which has been synthesized to give a fairly simple picture of this aspect of physiology in health and disease. It is distinctly a volume of more interest to the physiologist or investigator than to the clinician. There is an extensive bibliography appended.

Insomnia: How to Combat It. By JOSEPH COLLINS, M.D. D. Appleton & Co., New York and London, 1930. vi + 130 pages.

This short account of one of the most troublesome symptoms in medicine is an excellent presentation of the subject. It is clearly written and should appeal to any physician, and especially is a good book to put in the hands of patients.